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John A. Riley Partner

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Bracewell & Giuliani LLP 111 Congress Avenue Suite 2300 Austin, Texas 78701-4061

November 26, 2012

Via Certified Mail Return Receipt Requested Certified Receipt 7007 0220 0004 2199 4043

Mr. Jerry Saunders USEPA Region 6 1445 Ross Avenue Suite 1200 Mail Code: 6EN Dallas, TX 75202-2733

Re: Data from the second of four sampling events for private water wells in Parker

County, Texas

Dear Mr. Saunders:

As explained more fully in its March 30, 2012 letter to the United States Environmental Protection Agency ("EPA"), Range Production Company and Range Resources Corporation (although separate legal entities for convenience are collectively referred to as "Range") committed to sample certain private water wells located in southern Parker County, Texas and conduct certain specified analyses in four sampling events approximately three months apart subject to securing the well owners' consent.

Range has completed the second of these events and includes with this letter a compact disc containing the analytical data. In this second sampling event, Range consultants obtained and analyzed samples from the 14 water wells identified in Table 1 (see the enclosed compact disc). As noted in Range's letter to EPA dated August 17, 2012, Range informed well owners that Range would not sample their wells after the first event if Range did not receive written consent. Five well owners have not provided written consent and, consequently, Range has discontinued sampling of those wells. In one instance where the well owner did provide written consent, the well pumping system was not working and attempts to contact the well owner were unsuccessful; therefore, the well was not sampled in this round of sampling.

Please do not hesitate to contact me if you have any questions or require further information regarding this matter.

### BRACEWELL &GIULIANI

Mr. Jerry Saunders USEPA Region 6 November 26, 2012 Page 2

Sincorely

John A. Riley

Enclosure as indicated

c w/encl.:

Mr. David P. Poole

General Counsel

Range Production Company

# Table 1 Quarterly Residential Well Sampling Project Parker County, Texas Second Quarterly Sampling Event - August 2012 Summary of Samples Collected

Water Well Number (WW#)	Property Owner	Date Condition identification				
WW 1	Rodney & Geraldine Wells	08/17/12	Un-treated	WWW01-WEL-081712		
WW 2	Michelle (Shelly) Perdue	08/17/12	Un-treated	WWW02-PER-081712		
WW 6	Amanda Thompson	08/17/12	Un-treated	WWW06-THO-081712		
WW 7	Jeff Merryman	08/18/12	Un-treated	WWW07-MER-081812		
WW 10	Devyn Hayley	08/28/12	Treated	WWW10-HAY-082812	Collected at tank inlet; therefore, sample for analysis at Isotech cannot be collected	
WW 11	Harry & Margaret Anderson	08/17/12	Un-treated	WWW11-AND-081712	100000000000000000000000000000000000000	
WW 13	Thomas (Tom) & Elizabeth Struths	08/18/12	Un-treated	WWW13-STR-081812 DUP-081812	Duplicate collected (Accutest)	
WW 14A	Stephen & Carof Hurst	08/18/12	Un-treated	WWW14A-HUR-081812	Volume for MS/MSD collected (Accutest)	
WW 15	Stephen & Carol Hurst	08/18/12	Un-treated	WWW15-HUR-081812	, , , , , , , , , , , , , , , , , , , ,	
WW 18	Thomas (Tom) & Elizabeth Struths	08/28/12	Treated	WWW18-STR-082812	Collected at tank inlet; therefore, sample for analysis at Isotech cannot be collected	
WW 19	Joseph (Joe) & Rebecca Williams	08/19/12	Un-treated	WWW19-WIL-081912		
WW 20	Dennis Huffman	08/19/12	Un-treated	WWW20-HUF-081912		
WW 21	Kirk & Brenda Van Newkirk				n was not working, and attempts made in therefore, the well was not sampled.	
WW 24	Pamela Smith	08/17/12	Un-treated	WWW24-SMI-081712		
WW 25	Jeff Mathews	08/17/12	Un-treated	WWW25-MAT-081712	/// L L L L L L L L L L L L L L L L L L	
	Trip Blank	08/19/12		TRIPBLANK-081912-1		
	Trip Blank	08/19/12		TRIPBLANK-081912-2	1 ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	
	Trip Blank	08/28/12		TRIPBLANK-082812-3		
	Equipment Blank	08/19/12	C)0	EQUIPBLANK-081912		



08/31/12



### **Technical Report for**

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW11-AND

Accutest Job Number: TC14968

Sampling Date: 08/17/12

### Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



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### Sample Summary

EarthCon Consultants

Job No:

TC14968

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW11-AND

Sample	Collected			Matri	ix	Client	
Number	Date	Time By	Received	Code	Туре	Sample ID	
TC14968-1	08/17/12	11:50	08/21/12	AQ	Ground Water	WW11-AND-081712	





### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14968

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:54:12 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14968. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AO Batch ID: VZ3732

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

Matrix AO Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



### Summary of Hits Job Number: TC14968

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

08/17/12 Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14968-1	WW11-AND-0817	12				
Methane		0.0504	0.00050	0.00030	mg/l	RSKSOP-147/175
Ethane		0.0022	0.0010	0.00050	mg/l	RSKSOP-147/175



Page 1 of 1





Report of Analysis	



Client Sample ID: WW11-AND-081712

 Lab Sample ID:
 TC14968-1
 Date Sampled:
 08/17/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed By Prep Date Prep Batch **Analytical Batch** Z028327.D 1 08/24/12 AK Run #1 n/a n/a VZ3732 Run #2

Purge Volume Run #1 5.0 ml

Run #2

### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	102%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	92%		75-121%		
2037-26-5	Toluene-D8	104%		87-119%		
460-00-4	4-Bromofluorobenzene	113%		80-133%		

U = Not detected S

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Client Sample ID: WW11-AND-081712

 Lab Sample ID:
 TC14968-1
 Date Sampled:
 08/17/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003638.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2							

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.0504	0.00050	0.00030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0022	0.0010	0.00050	mg/1	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	



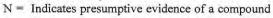
SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank









• LRC Form

Custody Documents	and Other Forms
Includes the following v	where applicable:



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TC14968: Chain of Custody Page 1 of 3





### **Accutest Laboratories Sample Receipt Summary**

Accutest Job Number: TC14968 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY Date / Time Received: 8/21/2012 Airbill #'s: 801561645028 **Delivery Method:** FedEx No. Coolers: 1 Therm ID: IRGUN5; Temp Adjustment Factor: -0.4; Cooler Temps (Initial/Adjusted): #1: (2.8/2.4); Cooler Security Y or N Y or N Sample Integrity - Documentation N or 3. COC Present: V V 1. Custody Seals Present: 1. Sample labels present on bottles: 4. Smpl Dates/Time OK 2. Custody Seals Intact: V 2. Container labeling complete: V 3. Sample container label / COC agree: V Cooler Temperature Y or N 1. Temp criteria achieved: N Sample Integrity - Condition 2. Cooler temp verification: V 1. Sample recvd within HT: 3. Cooler media: Ice (Bag) 2. All containers accounted for: V 3. Condition of sample: Quality Control Preservation N/A WTB STB Intact 1. Trip Blank present / cooler: H Sample Integrity - Instructions Y N V 2. Trip Blank listed on COC: 1. Analysis requested is clear: V 3. Samples preserved properly: V 2. Bottles received for unspecified tests V 4. VOCs headspace free: V 3. Sufficient volume recvd for analysis: V 4. Compositing instructions clear: V 5. Filtering instructions clear: V Comments

TC14968: Chain of Custody

Page 1 of 2

Page 2 of 3





### Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	40Z	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0,4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	N/P Note #2 - Preservative check not applicable.		24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14968: Chain of Custody

Page 3 of 3



### Appendix A Laboratory Data Package Cover Page

TC14968 This data package consists of

1	This sig	mature page, the laboratory revie	w checklist, and the following reportable data:
C	R1	Field chain-of-custody docum	nentation;
ū	R2	Sample identification cross-r	
Q.	R3	Test reports (analytical data	sheets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
J	R4	Surrogate recovery data incli	
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
1.0	R5	Test reports/summary forms	
D.	R6	Test reports/summary forms	for laboratory control samples (LCSs) including:
0		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
D	R7	Test reports for project matrix	spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
D.	R8	Laboratory analytical duplica	te (if applicable) recovery and precision;
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
IJ	R9	List of method quantitation lin	nits (MQLs) and detectability check sample results for each analyte for each
D.	R10	Other problems or anomalies	
Eve	ontion Don	ort for each "No" or "Not Deviews	od (ND)" itom is I shoreton. Poulou Charlifet and for such as a late and for

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Obselv if spelingh	las This labourtes superior		and the state of t						
Check, if applicab	ie. This laboratory meets a	This laboratory meets an exception under 30 TAC&25.6 and was last inspection by							
ii.		on April 2011. Any findings affecting the dat Reports herein. The official signing the cover pa releasing this data package and is by signature	ge of the report in which these data are						
QA Manager									
Name (Printed)	Signature	Official Title (printed)	Date						
Richard Rodriguez	Il de	Laboratory Director	8/29/2012						



aboratory		ABORATORY REVIEW CHECKL  Accutest Guif Coast LRC Date:	OI. ILLI SITIABLE			12	_	_	
aboratory	Marile.	Quarterly Well Sampling, Parker		8/29/2012					
roject Na	me:		Project Number:	TO	1496	28			
eviewer				_				_	
# <sup>1</sup>	A <sup>2</sup>		Number(s):	GSS178, VZ3732 YES NO NA NR EF					
-7		DESCRIPTION CO. CO.		YES	NO	NA.	NR	E	
R1	OI	CHAIN-OF-CUSTODY (C-O-C):	Vana of cassala acceptability			200			
		Did samples meet the laboratory's standard condi upon receipt?	ions of sample acceptability	X					
		Were all departures from standard conditions des	aribad in an avantina ranat?	X	-	-		$\vdash$	
R2	10		cribed in an exception report?	^	_	-		_	
NZ.	U	Sample and quality control (QC) identification		-			-		
		Are all field sample ID numbers cross-referenced		X					
-		Are all laboratory ID numbers cross-referenced to	the corresponding QC data?	X	le t	121	134		
R3	01	Test reports							
		Were samples prepared and analyzed within hold		X					
		Other than those results <mql, all="" other="" raw<="" td="" were=""><td>values bracketed by calibration</td><td>X</td><td></td><td></td><td></td><td></td></mql,>	values bracketed by calibration	X					
		standards?		13.5			E 4		
		Were calculations checked by a peer or supervisor		X			121		
		Were all analyte identifications checked by a peer		X			124		
		Were sample detection limits reported for all analy		X		1 11		L	
		Were all results for soil and sediment samples rep				X			
		Were % moisture (or solids) reported for all soil an				X			
		Were bulk soils/solids samples for volatile analysi SW846 Method 5035?	s extracted with methanol per			X			
		If required for the project, are TIC's reported?			-	16.65		-	
R4	0	Surrogate recovery data		-		X	_	_	
14	-			-			-	F	
		Were surrogates added prior to extraction?	with in the Lebender CO Contact	X			-	H	
R5	OI	Were surrogate percent recoveries in all samples		Х	$\vdash$			_	
Ko	01	Test reports/summary forms for blank sample:		V			-	F	
		Were appropriate type(s) of blanks analyzed? Were blanks analyzed at the appropriate frequency		X				H	
		Were method blanks taken through the entire ana		Х	$\vdash$			H	
		preparation and, if applicable, cleanup procedures		X					
		Were blank concentrations <mql?< td=""><td></td><td>V</td><td></td><td></td><td></td><td>H</td></mql?<>		V				H	
R6	OI			X					
KO	Oi	Laboratory control samples (LCS):		V			-	F	
		Were all COCs included in the LCS?	propodure including area and	X				Н	
		Was each LCS taken through the entire analytical cleanup steps?	procedure, including prep and	X					
		Were LCSs analyzed at required frequency?		V	-	-	-	-	
		Were LCS (and LCSD, if applicable) %Rs within t	no loboratory OC limite?	X	-	_	-	-	
		Does the detectability check sample data docume		X	-			-	
		detect the COCs at the MDL used to calculate the		X				3	
	,	Was the LCSD RPD within QC limits?	SDLS?			Х	-	-	
R7	OI	Matrix spike (MS) and matrix spike duplicate (I	ASD) data			_^_		_	
IXI	- 01	Were the project/method specified analytes includ		~			-		
		Were MS/MSD analyzed at the appropriate freque		X					
		Were MS (and MSD, if applicable) %Rs within the		^	Х		-	15	
		Were the MS/MSD RPDs within laboratory QC lim		х	^				
R8	OI	Analytical duplicate data	ito:	^					
110	01	Were appropriate analytical duplicates analyzed for	or each matrix?	V					
		Were analytical duplicates analyzed at the approp		X		-	-	-	
		Were RPDs or relative standard deviations within					+51	-	
R9	OI	Method quantitation limits (MQLs):	ine laboratory QC IIIIIIS?	X				-	
113	U	Are the MQLs for each method analyte included in	the laboratory data neckana?	V		-	-		
		Do the MQLs for each method analyte included in		X				+	
		Are unadjusted MQLs and DCSs included in the la		X	V		-		
R10	OI	Other problems/anomalies	aboratory data package?	-	Х				
KIU	OI -	Are all known problems/anomalies/special condition	one noted in this LDC and ED2	~	7	-	-		
		Was applicable and available technology used to		X					
				Х					
		Is the laboratory NELAC-accredited under the Tex Program for the analytes, matrices, and methods a data package?		х	1			B	



aboratory Name: Accutest Gulf Coast LRC Date:					/2012		
Project Na		Quarterly Well Sampling, Parker			4968		
Reviewer		Anita Patel	Prep Batch Number(s):		78, VZ3		
#	A <sup>2</sup>	DESCRIPTION		YES I	NO NA	NR*	ER#
S1	10	Initial calibration (ICAL)					
			e response factors for each analyte within QC	x			
		limits?	1174.50				
		Were percent RSDs or correlation co		X			
			mended in the method used for all analytes?	X			
			ne lowest and highest standard used to	x			
		calculate the curve?	V				
		Are ICAL data available for all instrun		X	1		
			verified using an appropriate second source	x	-		
		standard?		1.5			
S2	OI		erification (ICCV AND CCV) and continuing		-		
		Was the CCV analyzed at the method		X	.3		
			alyte within the method-required QC limits?	Х	-		_
		Was the ICAL curve verified for each		X			
	-		e concentration in the inorganic CCB <mdl?< td=""><td></td><td>X</td><td></td><td>2</td></mdl?<>		X		2
\$3	0	Mass spectral tuning			700		
		Was the appropriate compound for the		X	15		
		Were ion abundance data within the	method-required QC limits?	Х	1.0		
S4	0	Internal standards (IS)					
		Were IS area counts and retention tin	X				
S5	01	Raw data (NELAC Section 5.5.10)				200	-
			matograms, spectral data) reviewed by an	x			
		analyst?		1.65			
20	_	Were data associated with manual in	tegrations flagged on the raw data?	X			
S6	0	O Dual column confirmation  Did dual column confirmation results meet the method-required QC?					
07	-			100	X		
S7	0	Tentatively identified compounds	-				
		checks?	ss spectra and TIC data subject to appropriate		X		
S8	1						
50	1	Interference Check Sample (ICS) r		-	-		
S9		Were percent recoveries within metho			X		
39			kes, and method of standard additions	1	-	-	
			, and the linearity within the QC limits		X		
S10	OI	specified in the method?  Method detection limit (MDL) studi	10				
310	UI			N/ T	-	-	
		Was a MDL study performed for each		X			
S11	OI	Is the MDL either adjusted or support Proficiency test reports	led by the analysis of DCSs?	X			5
311	- Oi		ceptable on the applicable proficiency tests or	-	-	-	
		evaluation studies?	ceptable on the applicable proficiency tests of	X			
S12	OI	Standards documentation			_		
012	- Oi		s NIST-traceable or obtained from other	-	-		
	1000	appropriate source?	5 THE I LECEANIE OF ODIGINES HOLD OTHER	X			
S13	OI	Compound/analyte identification p	rocedures		-		
	<u> </u>	Are the procedures for compound/ana		хТ			
S14	OI	Demonstration of analyst compete		^		_	
		Was DOC conducted consistent with		ΧI		T	
		Is documentation of the analyst's com		x			
S15	OI		ion for methods (NELAC Chapter 5)	^			-
7.15			the data documentated, verified, and	Lea I			
		validated, where applicable?		X			
S16	OI	Laboratory standard operating pro	cedures (SOPs)				
		Are laboratory SOPs current and on f		X	-		



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	8/29/2012
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC14968
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS178, VZ3732
ER#	Descrip	tion		
1	blank. Th	rting purposes, the MQL is defined in the ne SDL is defined in the report as the MI rting purposes, the method blank repres	or,	
2	included	in the laboratory data package.		
3		ratory is NELAC-accredited under the To associated with this laboratory data pac		
4	All anom	alies are discussed in the case narrative		
5	The second second second	oratory does not perform DCS analysis for ave values in the Texas TRRP PCL table		mponents reported are not listed or

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



~~	13	FA	**		
GC	/N	15	Vo	atı	PC

QC Data Summaries

### Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method: SW846 8260B

### Method Blank Summary

TC14968 Job Number:

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l
108-88-3	Toluene	ND	1.0	0.26	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l

CAS No.	Surrogate Recoveries		Limits	
1868-53-7	Dibromofluoromethane	106%	79-122%	
17060-07-0	1,2-Dichloroethane-D4	98%	75-121%	
2037-26-5	Toluene-D8	106%	87-119%	
460-00-4	4-Bromofluorobenzene	114%	80-133%	



Method: SW846 8260B

### Blank Spike Summary

Job Number: TC14968

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111
CAS No.	Surrogate Recoveries	BSP	Li	mits	
1868-53-7	Dibromofluoromethane	99%	79-	-122%	
17060-07-0	1,2-Dichloroethane-D4	90%	75-	-121%	
2037-26-5	Toluene-D8	103%	87-	-119%	
460-00-4	4-Bromofluorobenzene	109%	80-	-133%	



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

### Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC14968

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

	TC1497	70-1	Spike	MS	MS	MSD	MSD		Limits
Compound	ug/I	Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
Benzene	1.0 U		25	24.5	98	24.2	97	1	76-118/16
Ethylbenzene	1.0 U		25	24.7	99	23.7	95	4	75-112/12
Toluene	1.0 U		25	24.4	98	24.1	96	1	77-114/12
Xylene (total)	3.0 U		75	74.1	99	72.6	97	2	75-111/12
	Benzene Ethylbenzene Toluene	Compound ug/I  Benzene 1.0 U Ethylbenzene 1.0 U Toluene 1.0 U	Benzene 1.0 U Ethylbenzene 1.0 U Toluene 1.0 U	Compound         ug/l         Q         ug/l           Benzene         1.0 U         25           Ethylbenzene         1.0 U         25           Toluene         1.0 U         25	Compound         ug/I         Q ug/I         ug/I           Benzene         1.0 U         25         24.5           Ethylbenzene         1.0 U         25         24.7           Toluene         1.0 U         25         24.4	Compound         ug/l         Q ug/l         ug/l         %           Benzene         1.0 U         25         24.5         98           Ethylbenzene         1.0 U         25         24.7         99           Toluene         1.0 U         25         24.4         98	Compound         ug/l         Q ug/l         ug/l         % ug/l           Benzene         1.0 U         25         24.5         98         24.2           Ethylbenzene         1.0 U         25         24.7         99         23.7           Toluene         1.0 U         25         24.4         98         24.1	Compound         ug/l         Q         ug/l         ug/l         %         ug/l         %           Benzene         1.0 U         25         24.5         98         24.2         97           Ethylbenzene         1.0 U         25         24.7         99         23.7         95           Toluene         1.0 U         25         24.4         98         24.1         96	Compound         ug/l         Q         ug/l         ug/l         %         ug/l         %         RPD           Benzene         1.0 U         25         24.5         98         24.2         97         1           Ethylbenzene         1.0 U         25         24.7         99         23.7         95         4           Toluene         1.0 U         25         24.4         98         24.1         96         1

CAS No.	Surrogate Recoveries	MS	MSD	TC14970-1	Limits
1868-53-7	Dibromofluoromethane	107%	106%	104%	79-122%
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96%	75-121%
2037-26-5	Toluene-D8	107%	107%	107%	87-119%
460-00-4	4-Bromofluorobenzene	113%	113%	113%	80-133%



<sup>\* =</sup> Outside of Control Limits.



GC Volatiles	
QC Data Summaries	

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: RSKSOP-147/175

### Method Blank Summary

Job Number: TC14968

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	<b>File ID</b>	DF	<b>Analyzed</b> 08/27/12	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1		LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/1
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l

### Blank Spike Summary

Job Number: TC14968

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

tical Daten	Analytica	Batch	Prep Bate	Prep Date	Ву	Analyzed	DF	File ID	Sample
78	GSS178		n/a	n/a	LT	08/27/12	1	SS003615.D	GSS178-BS

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130



<sup>\* =</sup> Outside of Control Limits.

### **Matrix Spike Summary**

Job Number: TC14968

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14968-1

		TC14970-1	Spike	MS	MS		
CAS No.	Compound	ug/I Q	ug/l	ug/l	%	Limits	
74-82-8	Methane	914 b	21.5	600	-337* a	60-140	
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140	
74-84-0	Ethane	42.3	43.3	71.7	68	60-140	
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140	
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140	
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140	

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

# Duplicate Summary Job Number: TC14968

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14968-1

		TC14970-1	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	914 a	869	Е	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



### ANALYSIS REPORT

Lab #: 261138 Job #: 19036

Sample Name/Number: WW11-AND-081712 Company: Oil Tracers, LLC

Date Sampled: 8/17/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	δ <sup>13</sup> C ‰	δD ‰	δ <sup>18</sup> O %。
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.07			
Oxygen	7.30			
Nitrogen	89.88			
Carbon Dioxide	0.35			
Methane	1.38	-42.3	-112	
Ethane	0.0158			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 14

Specific gravity, calculated: 0.978

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.79

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Isotopes obtained online via GC-C/P-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



09/06/12



### **Technical Report for**

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW10-HAY

Accutest Job Number: TC15480

Sampling Date: 08/28/12

### Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

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### Sample Summary

EarthCon Consultants

Job No:

TC15480

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW10-HAY

Sample Collected		Matrix		x	Client		
Number	Date	Time By	Received	Code	Туре	Sample ID	
TC15480-1	08/28/12	13:20	08/29/12	AQ	Ground Water	WW10-HAY-082812	





### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC15480

Site: Quarterly Well Sampling, Parker County, Texas Report Date 9/6/2012 5:49:20 PM

1 Sample was collected on 08/28/2012 and received intact at Accutest on 08/29/2012 and properly preserved in 1 cooler at 3.3 Deg C. The sample received an Accutest job number of TC15480. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VC1174

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC15249-4MS, TC15249-4MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS181

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC15494-1MS, TC15494-2DUP were used as the QC samples indicated.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



# Summary of Hits Job Number: TC15480

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 08/28/12

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC15480-1	WW10-HAY-0828	12				
Methane		0.309	0.0025	0.0015	mg/l	RSKSOP-147/175
Ethane		0.0413	0.0010	0.00050	mg/l	RSKSOP-147/175
Propane		0.0110	0.0015	0.00075	mg/l	RSKSOP-147/175
Butane		0.0025	0.0015	0.00075	mg/l	RSKSOP-147/175



Page 1 of 1



Report of Analysis	



### 3

### Report of Analysis

Client Sample ID: WW10-HAY-082812

 Lab Sample ID:
 TC15480-1
 Date Sampled:
 08/28/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/29/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C00255002.D	1	08/31/12	CF	n/a	n/a	VC1174
Run #2							

Purge Volume
Run #1 5.0 ml
Run #2

### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	96%		72-122%		
17060-07-0	1,2-Dichloroethane-D4	85%		68-124%		
2037-26-5	Toluene-D8	94%		80-119%		
460-00-4	4-Bromofluorobenzene	92%		72-126%		

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Client Sample ID: WW10-HAY-082812

 Lab Sample ID:
 TC15480-1
 Date Sampled:
 08/28/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/29/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

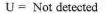
Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003714.D	1	09/04/12	LT	n/a	n/a	GSS181
Run #2	SS003715.D	5	09/04/12	LT	n/a	n/a	GSS181

#### **RSK147 Special List**

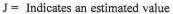
CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.309 a	0.0025	0.0015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0413	0.0010	0.00050	mg/l	
74-98-6	Propane	0.0110	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.0025	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

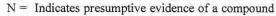


SDL - Sample Detection Limit

MQL = Method Quantitation Limit



B = Indicates analyte found in associated method blank







E = Indicates value exceeds calibration range



LRC Form

Custody Documents	and Other Forms
Includes the following  Chain of Custody	where applicable:



			CHAI	NO	F	CU	ST	O	D	1											PA	GE		OF
MACCUTEST			10165 Har	nin Pr C	. 160 W	wetne	TV7	7076						FED-E	X Tracking	2#				Bottle On	der Cont	roi #		
				3-271-470		713								Accuse	at Quote i	_		-		Accutest	J00 F 5	71	115	480
Client / Reporting Information		A THE LOTTER	Project			OLA	184	54		(TE	No.		13.12				Req	uest	ed /	Anal	vse	5	-4-	Matrix Codes
Company Name	Project Name:																							William Goods
EarthCon Consultants, Inc.	Second Quart	arly Wall Same	olina Darka	Count	v Tava	_								1	Je.					- 1				
Street Address	Street	city tren Sann	pinig, rarke	AND AND	e and		i Park	100	. 44	11/17	74 A	V diag	11-1-27		Ethene, Isobutane, Methane,									DW - Drinking War GW - Ground Wat
4800 Sugar Grove Blvd., Suite 390	0			Billing	Informati	on (t	f differ	ent fr	rom R	epon	t to)				ž.									WW - Water
City State Zip	City		State	Compan	y Name									1	ane									SW - Surface Wat SO - Soil
Stafford TX 77477															par			- 1				. ()		SL- Sludge
Project Contact E-mail	Project #			Street A	ddress										8								- 1	SED-Sediment OI - Oil
Gabriela Floreslovo Phone # Fax #	Client Purchase C	udos d		City					State			Zip		7	e,			- 1				. 1	- 1	AIR - Air
281-201-3513	Cheni Furchase C	augr #		City					Statu			Zip	5		175 175								- 18	SOL - Other Solid
281-201-3513 Sampler(s) Name(s) Phone #	Project Manager			Attention		-	_	141	-				_		SK.						- 1			WP - Wipe FB-Field Blank
JULIE HELFRICH (281)240-5				3,50,000										8	Ethane, I			L Y		- 1				7,30,30,30
The state of the s		Collec	tion			15	-	Numb	er of p	reserv	ed Bott	ties		BTEX 8260B	E 6				- 1		- 1			
· · · · ·					120	П	T O	-	7 4	pter	=	20	9 K3	X	Butane, E					- 1				
Field ID / Point of Collection	Date	Time	Sampled By	Matrix	a of bottles	皇	2 3	웊	E P	N TO	NEO B	NAHS	ENCOR	B	P.P.					- 1				LAB USE ONLY
1 WW10-HAY-082812	08/28/12	13:20	JLH	W	10	V		П		П				V	V									
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Turnamend Time ( Surfaces days)	Military and the second	Charles and the	No. Oc. 1					Ц															- 1	
Tumaround Time ( Business days)  Standard	Approved By (Accuse	<b>新发现的形式</b>	Carlo Salada	MARKET S			Data C	_	_	_				(Carrie)		342	tions.	144	Comm	ents / S	Special	Instruct	tions	
5 Day RUSH	Approved by (Accus	rat Pinj: / L/ace:			Commerc						X T		Format											
4 Day RUSH				_	FULT1 (					i	_	Other												
3 Day RUSH	-				REDT1 (	Love	1344)				_													
2 Day RUSH	-				Commerc																			
☐ 1 Day EMERGENCY  Emergency & Rush T/A data svallable V/A Lablink		_					Comme													-				
Cincigority of Rush 1/A card available VIA Lablink							Comme						mmary Surroga	te Sur	mary									
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1 HA A A A A A A A A A A A A A A A A A A	201:40	teceived by:	11					Relin	quishe	d By:						1	Date Tim	91		leceived				

Intact
Not intact

TC15480: Chain of Custody Page 1 of 3





### Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 8/29/2	012		Delivery N	Anthod	6	Airbill #'s:				
		Car of Carnel Color		neulou			7.0			
No. Coolers: 1	Therm I	ID: IRGUN5				Temp Adjustment Factor:	-0.4			
Cooler Temps (Initial/Adjusted	i): <u>#1: (</u>	3.7/3.3)								
	or N			Y 0	or N	Sample Integrity - Documentation	Y	or	N	
Custody Seals Present:		3. COC P				Sample labels present on bottles:	~			
2. Custody Seals Intact:		4. Smpl Date	s/Time OK	$\checkmark$		2. Container labeling complete:	V			
Cooler Temperature	Y or	N				<ol><li>Sample container label / COC agree;</li></ol>	~			
1. Temp criteria achieved:						Sample Integrity - Condition	Y	or	N	
Cooler temp verification:		21.61				1. Sample recvd within HT:	V			
3. Cooler media:	Ice (	(Bag)				2. All containers accounted for:	V			
Quality Control Preservation	Yo	r N N/A	9	WTB	STB	3. Condition of sample:		Intac	t	-
1. Trip Blank present / cooler:	$\checkmark$					Sample Integrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						Analysis requested is clear:	V			
<ol><li>Samples preserved properly:</li></ol>	$\mathbf{V}$					2. Bottles received for unspecified tests			V	
4. VOCs headspace free:						<ol><li>Sufficient volume recvd for analysis:</li></ol>	V			
						Compositing instructions clear:				V
						5. Filtering instructions clear:				V

TC15480: Chain of Custody

Page 2 of 3







#### Sample Receipt Log

Page 2 of 2

Job #: TC15728

Date / Time Received: 9/4/2012 2:52:00 PM

Initials: CH

Client: DOW CHEMICAL

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC15728-1	32oz	1	2-84	N/P	Note #2 - Preservative check not applicable.	IRGUN5	1.1	-0.4	0.7
1	TC15728-2	32oz	1	2-84	N/P	Note #2 - Preservative check not applicable.	IRGUN5	1.1	-0.4	0.7

TC15480: Chain of Custody Page 3 of 3



# Appendix A Laboratory Data Package Cover Page TC15480 This data package consists of

U	This sign	nature page, the laboratory revie	w checklist, and the following reportable d	ata:
D.	R1	Field chain-of-custody docur	mentation;	
Q.	R2	Sample identification cross-r	eference;	
P	R3	Test reports (analytical data	sheets) for each environmental sample tha	at includes:
		a)	Items consistent with NELAC 5.1	3 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,	
		c)	preparation methods,	
		d)	cleanup methods, and	
		e)	if required for the project, tentativ	ely identified compounds (TICs).
Ţ.	R4	Surrogate recovery data incli		
		a)	Calculated recovery (%R), and	
		b)	The laboratory's surrogate QC lin	nits.
(J)	R5	Test reports/summary forms		
ā	R6		for laboratory control samples (LCSs) inclu	udina:
-		a)	LCS spiking amounts,	
		b)	Calculated %R for each analyte,	and
		c)	The laboratory's LCS QC limits.	al la
U	R7		x spike/matrix spike duplicates (MS/MSDs)	\including:
8		a)	Samples associated with the MS/	
		b)	MS/MSD spiking amounts,	Wide clearly identified,
		c)		analyte measured in the parent and
		d)		
		e)	Calculated %Rs and relative perc	and the second s
ū	R8		The laboratory's MS/MSD QC lim te (if applicable) recovery and precision:	ills
100	110			in the dualisate
		a) b)	The amount of analyte measured	in the duplicate,
		c)	The calculated RPD, and	at at early at the University
H	R9		The laboratory's QC limits for ana	
ū	R10		mits (MQLs) and detectability check sample	e results for each analyte for each
ū	KIU	Other problems or anomalies	ò.	
method f	for which the Statement	a laboratory does not hold NELA : I am responsible for the releas	ed (NR)" item in Laboratory Review Checkl AC accreditation under the Texas Laborator se of this laboratory data package. This lal	ry Accreditation Program.  boratory is NELAC accredited under the
the Exce requirem affirm to	eption Repor nents of the the best of r have been	t. This data package has been r methods used, except where no ny knowledge, all problems/ano	nethods, analytes, and matrices reported in reviewed by the laboratory and is complete ted by the laboratory in the attached excep malies, observed by the laboratory as havi e Laboratory Review Checklist, and no info	and technically compliant with the stion reports. By my signature below, I ing the potential to affect the quality of
Check, i	if applicable	: This laboratory meets an exc	eption under 30 TAC&25.6 and was last in	spection by
[1		[X ] TCEQ or [ ] or noted in the Exception Repor	n April 2011, Any findings affecting the data ts herein. The official signing the cover pa- sing this data package and is by signature	a in this laboratory data package are ge of the report in which these data are
QA Man	ager			
Name (P	rinted)	Signature	Official Title (printed)	Date
Richard	Rodriguez	Lengo	Laboratory Director	9/6/2012



aboratory		ABORATORY REVIEW CHECKLIST: REPORTABLE Accutest Gulf Coast   LRC Date:		/201	2		
		Quarterly Well Sampling, Parker					
Project Na		County, Texas Laboratory Project Number:	-	154		-	_
Reviewer		Anita Patel Prep Batch Number(s):			VC1		
#'	A <sup>2</sup>	DESCRIPTION	YES	NO	NA.	NK.	EF
R1	OI	CHAIN-OF-CUSTODY (C-O-C):					
	15.7	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	Sample and quality control (QC) identification	100				
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			100	
	LA.	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					100
		Were samples prepared and analyzed within holding times?	X	115		2.0	
		Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td>х</td><td></td><td>11</td><td></td><td></td></mql,>	х		11		
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	x				1
		Were sample detection limits reported for all analytes not detected?	x				
		Were all results for soil and sediment samples reported on a dry weight basis?	1		Х		-
		Were % moisture (or solids) reported for all soil and sediment samples?		-	X		+
		Were bulk soils/solids samples for volatile analysis extracted with methanol per	-		^		-
		SW846 Method 5035?			X		
		If required for the project, are TIC's reported?			Х		-
R4	0	Surrogate recovery data					
		Were surrogates added prior to extraction?	X			_	
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				-
R5	OI	Test reports/summary forms for blank samples	A		-	-	-
1.00	- 0.	Were appropriate type(s) of blanks analyzed?	Х	-		_	
		Were blanks analyzed at the appropriate frequency?	X				H
		Were method blanks taken through the entire analytical process, including		(-)			-
		preparation and, if applicable, cleanup procedures?	Х	110			
		Were blank concentrations <mql?< td=""><td>X</td><td>9</td><td></td><td></td><td></td></mql?<>	X	9			
R6	01	Laboratory control samples (LCS):	^				
		Were all COCs included in the LCS?	Х	1111			
		Was each LCS taken through the entire analytical procedure, including prep and		372			
		cleanup steps?	X		17.7		
		Were LCSs analyzed at required frequency?	Х				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectablility check sample data document the laboratory's capability to	9 4 1				
	/-	detect the COCs at the MDL used to calculate the SDLs?	X				3
	1 6 4	Was the LCSD RPD within QC limits?			Х		
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data			/\		
		Were the project/method specified analytes included in the MS and MSD?	Х	111			
		Were MS/MSD analyzed at the appropriate frequency?	X	Til	1		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?	X	0.111	-		
		Were the MS/MSD RPDs within laboratory QC limits?	X	11			
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?	Х	111	H.		
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	Х				
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	Х		1		I
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X			-4	
		Are unadjusted MQLs and DCSs included in the laboratory data package?		Х	Ε.		
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	Х				
		Was applicable and available technology used to lower the SDL to minimize the	X				
-		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation	76.				
		Program for the analytes, matrices, and methods associated with this laboratory	х				1



aboratory		Accutest Gulf Coast	LRC Date:		2012		
Project Na		Quarterly Well Sampling, Parker			5480	-	_
Reviewer		Anita Patel	Prep Batch Number(s):		81, VC1		
#1	A <sup>2</sup>	DESCRIPTION		YES	NO NA	NR"	ER:
S1	01	Initial calibration (ICAL)					
		Were response factors and/or relativ limits?	e response factors for each analyte within QC	х			
		Were percent RSDs or correlation co	pefficient criteria met?	X			
		Was the number of standards recom	mended in the method used for all analytes?	Х			100
		Were all points generated between to calculate the curve?	he lowest and highest standard used to	x	THE.		
		Are ICAL data available for all instrur	ments used?	х			+
			verified using an appropriate second source	X			
S2	01		erification (ICCV AND CCV) and continuing			_	_
JZ.	OI.	Was the CCV analyzed at the metho		X	-	_	
			nalyte within the method-required QC limits?	x	_	-	-
		Was the ICAL curve verified for each		x	_	-	-
			e concentration in the inorganic CCB <mdl?< td=""><td>^</td><td>V</td><td></td><td></td></mdl?<>	^	V		
\$3	0		e concentration in the morganic CCB <wdl?< td=""><td></td><td>X</td><td></td><td></td></wdl?<>		X		
- 53	0	Mass spectral tuning	be well-ad world for the load	W.T	-		
	li i i i i	Was the appropriate compound for the		X		-	-
-	_	Were ion abundance data within the	methoa-requirea QC limits?	X	h [] . r n		
S4	0	Internal standards (IS)	W. W. W. L. L. LOOK V. D.		-	-	-
			mes within the method-required QC limits?	X	23 25 5	-	
S5	01	Raw data (NELAC Section 5.5.10)			-	-	
		analyst?	ornatograms, spectral data) reviewed by an	х			
		Were data associated with manual in	ntegrations flagged on the raw data?	X	77		
S6	0	Dual column confirmation		1000			
		Did dual column confirmation results	meet the method-required QC?		1 X		1
S7	0	Tentatively identified compounds					
		If TICs were requested, were the mas checks?	ss spectra and TIC data subject to appropriate		x		
S8		Interference Check Sample (ICS)	results	(1)			
		Were percent recoveries within meth	od QC limits?		ΙX		
S9			ikes, and method of standard additions		-		
			s, and the linearity within the QC limits		х		
S10	OI	Method detection limit (MDL) stud	ies				
0.0		Was a MDL study performed for each		X	$\neg$	_	
		Is the MDL either adjusted or suppor		X	_	1	2
S11	OI	Proficiency test reports	to by the analysis of Dece.	-24	-		-
	-	Was the laboratory's performance ac	ceptable on the applicable proficiency tests or	x			
040	01	evaluation studies?		74.17			
S12	OI	Standards documentation	NOT !	-			
	( )		es NIST-traceable or obtained from other	X			
040	- 01	appropriate source?		1231	- 1		
S13	OI	Compound/analyte identification p		-	-	-	
044	- 01	Are the procedures for compound/an		Х	11 11	_	_
S14	OI	Demonstration of analyst compete		V I	-	-	
		Was DOC conducted consistent with		X		-	
04-		Is documentation of the analyst's con		X			
S15	OI		tion for methods (NELAC Chapter 5)	-52	and the	-	-
		validated, where applicable?	the data documentated, verified, and	×			
S16	Ol	Laboratory standard operating pro	ocedures (SOPs)				
		Are laboratory SOPs current and on	file for each method performed?	Х			



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	9/6/2012
Project Na	me:	Quarterly Well Sampling,	Parker Laboratory Project Number:	TC15480
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS181, VC1174
ER#1	Descript	ion		
1		ting purposes, the MQL is defin se SDL is defined in the report a	ed in the report as the RL. The unadjusted M s the MDL.	IQL/RL is reported in the method
2	The Lab		nalysis for Method RSKSOP-147/175. The output that the countries in the Texas TRRP PCL tables	
3		ting purposes, the method blant in the laboratory data package.	k represents the unadjusted MQL. The DCS	is on file in the laboratory and is not
4			er the Texas Laboratory Accreditation Progra data package for analytes that are listed in the	

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



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1 +1 // /	1/0	1211	AC
GC/MS	VU	laui	CO

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



### Method Blank Summary

Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC1174-MB	C0025498	4.D1	08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/1	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	
CAS No.	Surrogate Recoveries		Limi	ts		
1868-53-7	Dibromofluoromethane	100%	72-12	22%		
17060-07-0	1,2-Dichloroethane-D4	110%	68-12	24%		
2037-26-5	Toluene-D8	101%	80-11	9%		
460-00-4	4-Bromofluorobenzene	104%	72-12	26%		

### Blank Spike Summary

Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

		DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC1174-BS	C00254982.	DI	08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.0	96	76-118
100-41-4	Ethylbenzene	25	24.3	97	75-112
108-88-3	Toluene	25	21.6	86	77-114
1330-20-7	Xylene (total)	75	72.5	97	75-111
CAS No.	Surrogate Recoveries	BSP	Li	mits	
1868-53-7	Dibromofluoromethane	102%	79-	-122%	
17060-07-0	1,2-Dichloroethane-D4	103%	75-	-121%	
2037-26-5	Toluene-D8	95%	87-	-119%	
460-00-4	4-Bromofluorobenzene	101%	80-	-133%	



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

# Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC15480

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
TC15249-4MS	C0025498	6.D1	08/31/12	CF	n/a	n/a	VC1174
TC15249-4MSD	C0025498	7.D1	08/31/12	CF	n/a	n/a	VC1174
TC15249-4	C0025498:	5.D1	08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

		TC152	49-4	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l	Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	ND		25	22.3	89	22.4	90	0	68-119/12
100-41-4	Ethylbenzene	0.44	J	25	23.5	92	23.5	92	0	71-117/12
108-88-3	Toluene	0.37	J	25	23.8	94	21.9	86	8	73-119/13
1330-20-7	Xylene (total)	4.5		75	75.5	95	76.6	96	1	74-119/13
CAS No.	Surrogate Recoveries	MS		MSD	TO	C15249-4	Limits			
1868-53-7	Dibromofluoromethane	105%		101%	10	0%	72-1229	%		
17060-07-0	1,2-Dichloroethane-D4	100%		99%	10	7%	68-1249	%		
2037-26-5	Toluene-D8	103%		97%	10	6%	80-1199	%		
460-00-4	4-Bromofluorobenzene	90%		103%	10	0%	72-1269	%		



<sup>\* =</sup> Outside of Control Limits.



GC Volatiles	

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: RSKSOP-147/175

## Method Blank Summary Job Number: TC15480

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample GSS181-MB	File ID SS003712.D	DF	<b>Analyzed</b> 09/04/12	By LT	Prep Date n/a	Prep Batch n/a	Analytical Batch GSS181
GGGTGT ME	55005712.2		03/04/12	D.	ши	IV a	G55161

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/I
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/I
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



## Blank Spike Summary Job Number: TC15480

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
GSS181-BS	SS003710.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.7	101	68-139
74-85-1	Ethene	57.4	44.7	78	52-145
74-84-0	Ethane	43.3	31.5	73	68-131
74-98-6	Propane	60.6	47.2	78	69-131
75-28-5	Isobutane	72.5	60.0	83	72-131
106-97-8	Butane	76.6	63.6	83	66-128



<sup>\* =</sup> Outside of Control Limits.

## Matrix Spike Summary Job Number: TC15480

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15494-1MS	SS003719.D	1	09/04/12	LT	n/a	n/a	GSS181
TC15494-1	SS003718.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

		TC15494-1	Spike	MS	MS	
CAS No.	Compound	ug/I Q	ug/l	ug/l	%	Limits
74-82-8	Methane	0.50 U	21.5	21.4	99	68-139
74-85-1	Ethene	1.0 U	57.4	60.9	106	52-145
74-84-0	Ethane	1.0 U	43.3	43.8	101	68-131
74-98-6	Propane	1.5 U	60.6	63.6	105	69-131
75-28-5	Isobutane	1.5 U	72.5	79.7	110	72-131
106-97-8	Butane	1.5 U	76.6	83.9	110	66-128



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

# **Duplicate Summary** Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15494-2DUP	SS003722.D	1	09/04/12	LT	n/a	n/a	GSS181
TC15494-2	SS003721.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

		TC15494-2	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	0.50 U	ND		nc	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33



<sup>\* =</sup> Outside of Control Limits.



08/31/12



#### **Technical Report for**

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quater / WW20-HUF

Accutest Job Number: TC14964

Sampling Date: 08/19/12

#### Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



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### Sample Summary

EarthCon Consultants

Job No:

TC14964

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quater / WW20-HUF

Sample	Collected			Matri	ix	Client
Number	Date	Time By	Received	Code	Туре	Sample ID
TC14964-1	08/19/12	10:40	08/21/12	AQ	Ground Water	WW20-HUF-081912





#### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14964

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:49:13 PM

1 Sample was collected on 08/19/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14964. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VK449

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- = Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



# Summary of Hits Job Number: TC14964

EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas 08/19/12 Project:

Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14964-1	WW20-HUF-0819	12				
Methane Ethane		0.848 0.00736	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Page 1 of 1





Report of Analysis	



#### Report of Analysis

Client Sample ID: WW20-HUF-081912

 Lab Sample ID:
 TC14964-1
 Date Sampled:
 08/19/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed Prep Date Prep Batch Analytical Batch By K10047.D 08/23/12 VK449 Run #1 1 EM n/a n/a Run #2

Purge Volume
Run #1 5.0 ml
Run #2

#### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	101%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	96%		75-121%		
2037-26-5	Toluene-D8	102%		87-119%		
460-00-4	4-Bromofluorobenzene	124%		80-133%		

N = Indicates presumptive evidence of a compound



U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Client Sample ID: WW20-HUF-081912

 Lab Sample ID:
 TC14964-1
 Date Sampled:
 08/19/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

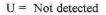
	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003629.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003630.D	10	08/27/12	LT	n/a	n/a	GSS178

Report of Analysis

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.848 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00736	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

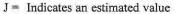
(a) Result is from Run# 2



SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range



B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound







M	isc. Forms
Cu	stody Documents and Other Forms
Inc	udes the following where applicable:
• (	hain of Custody
• I	RC Form



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TC14964: Chain of Custody Page 1 of 3





#### Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 8/21/2	2012		Delivery f	Method		FedEx	Airbill #'s: 801561645028	-			
No. Coolers: 1	Thern	n ID: IF	RGUN5;				Temp Adjustment Factor:	-0.4;			
Cooler Temps (Initial/Adjuste	d): <u>#1</u>	: (2.8/2.	4);_								
Cooler Security Y	or N	-		-	r N	Sample Inte	egrity - Documentation	Y	or	N	
Custody Seals Present:	E		COC Present:	V		1. Sample la	bels present on bottles:	$\checkmark$			
2. Custody Seals Intact;		4. Sr	npl Dates/Time OK	V		2. Container	labeling complete:	$\checkmark$			
Cooler Temperature	Y	or N				3. Sample co	ontainer label / COC agree:	V			
1. Temp criteria achieved:	V					Sample Int	egrity - Condition	Y	or	N	
Cooler temp verification:							cvd within HT:	V			
Cooler media:	lc	e (Bag)					ers accounted for:	V		П	
Quality Control Preservation	Y	or N	N/A	WTB	STB	3. Condition	of sample:		Intact		
1. Trip Blank present / cooler:				$\overline{\mathbf{v}}$		Sample Int	egrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:		V					requested is clear:	V		П	
3. Samples preserved properly:	V					2. Bottles re	ceived for unspecified tests			<b>V</b>	
4. VOCs headspace free:	V					3. Sufficient	volume recvd for analysis:	V			
						4. Composit	ting instructions clear:				V
						5. Filtering i	nstructions clear:				~
Comments											

TC14964: Chain of Custody

Page 2 of 3









#### Sample Receipt Log

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14964: Chain of Custody Page 3 of 3



### 2

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### Appendix A Laboratory Data Package Cover Page

TC14964 This data package consists of

[7]	This sig	nature page, the laboratory review	ew checklist, and the following reportable data:
Q.	R1	Field chain-of-custody docui	mentation;
ÇI.	R2	Sample identification cross-	reference;
	R3	Test reports (analytical data	sheets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
Q.	R4	Surrogate recovery data incl	uding:
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
0	R5	Test reports/summary forms	for blank samples;
Ö.	R6	Test reports/summary forms	for laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
Q.	R7	Test reports for project matri	x spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
	R8	Laboratory analytical duplica	ate (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
0	R9	List of method quantitation li	mits (MQLs) and detectability check sample results for each analyte for each
Ç.	R10	Other problems or anomalies	S.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

withheld.			
Check, if applicable	e: This laboratory meets an	exception under 30 TAC&25.6 and was last in	spection by
n		on April 2011. Any findings affecting the data eports herein. The official signing the cover pa eleasing this data package and is by signature	ge of the report in which these data are
QA Manager			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	_ There	Laboratory Director	8/29/2012

.aboratory		ABORATORY REVIEW CHECKLIST: REPORTABLE Accutest Gulf Coast   LRC Date:		9/20	12		_
, and a factor ,	110011101	Quarterly Well Sampling, Parker	0/2	.0,20	12		
Project Na	me:	County, Texas Laboratory Project Number:	TC	1496	34		
Reviewer		Anita Patel Prep Batch Number(s):	_		VK4	19	_
#1	I A <sup>2</sup>	DESCRIPTION			NA <sup>3</sup>		ER
R1	OI	CHAIN-OF-CUSTODY (C-O-C):	100	110	10.1		
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	х				
		Were all departures from standard conditions described in an exception report?	X				-
R2	OI		^			-	-
rvz.	OI.	Sample and quality control (QC) identification  Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	1 1/				20
			X				-
R3	01	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Х		less.		
Ro	Ol	Test reports	V			-	
		Were samples prepared and analyzed within holding times?  Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td>X</td><td></td><td></td><td></td><td></td></mql,>	X				
		standards?	^				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X			=	
		Were sample detection limits reported for all analytes not detected?	X		h ri		
		Were all results for soil and sediment samples reported on a dry weight basis?			Х		
		Were % moisture (or solids) reported for all soil and sediment samples?			Х		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TIC's reported?	1.3		Х	7	
R4	0	Surrogate recovery data	1		4		
		Were surrogates added prior to extraction?	X			1.7	
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X			in, i	
R5	OI	Test reports/summary forms for blank samples	1				
		Were appropriate type(s) of blanks analyzed?	X				
	Were blanks analyzed at the appropriate frequency?	X		1	1		
		Were method blanks taken through the entire analytical process, including	х		_		
		preparation and, if applicable, cleanup procedures?	100	-		-	
-	-	Were blank concentrations <mql?< td=""><td>X</td><td>1,000</td><td></td><td></td><td></td></mql?<>	X	1,000			
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X			-6.	
		Was each LCS taken through the entire analytical procedure, including prep and	X				
		Cleanup steps?	V	-			-
		Were LCSs analyzed at required frequency?  Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X	$\vdash$	-		-
	1	Does the detectability check sample data document the laboratory's capability to		-	-	-	
		detect the COCs at the MDL used to calculate the SDLs?	X				1
		Was the LCSD RPD within QC limits?	2.0		Х		
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data	1		- //		-
		Were the project/method specified analytes included in the MS and MSD?	Х			7_1	
		Were MS/MSD analyzed at the appropriate frequency?	X			-	
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?		Х			Fi
		Were the MS/MSD RPDs within laboratory QC limits?	X				1
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?	X				1
		Were analytical duplicates analyzed at the appropriate frequency?	X			-	
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				1
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X				-
	-	Are unadjusted MQLs and DCSs included in the laboratory data package?		Х			
R10	OI	Other problems/anomalies	-		-	-	1
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				-
	-	Was applicable and available technology used to lower the SDL to minimize the	X				-
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?	х				

Laboratory Name:		Accutest Gulf Coast LRC Date:				8/29/2012				
Project Name:		Quarterly Well Sampling, Parker Laboratory Project Number:		TC14964						
Reviewer			rep Batch Number(s):	GSS178, VK449						
#1	A <sup>2</sup>	DESCRIPTION		YES NO NA3 NR4						
S1	01	Initial calibration (ICAL)								
-15		Were response factors and/or relative re	esponse factors for each analyte within QC	x						
		limits?		^						
		Were percent RSDs or correlation coeff	icient criteria met?	X		100				
		Was the number of standards recomme	ended in the method used for all analytes?	X						
		Were all points generated between the l	lowest and highest standard used to	x						
		calculate the curve?		^						
		Are ICAL data available for all instrumer	nts used?	X		F = 1				
		Has the initial calibration curve been ve	rified using an appropriate second source	x						
		standard?		^						
S2	OI	Initial and continuing calibration veri	fication (ICCV AND CCV) and continuing				X			
		Was the CCV analyzed at the method-re	equired frequency?	X	-	(				
		Were percent differences for each analy	te within the method-required QC limits?	X	1					
		Was the ICAL curve verified for each an	alyte?	X						
		Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td></mdl?<>								
S3	0	Mass spectral tuning			X					
		Was the appropriate compound for the	method used for tuning?	Х	1	1				
		Were ion abundance data within the me		X						
S4	0	Internal standards (IS)								
		Were IS area counts and retention times	s within the method-required OC limits?	XI						
S5	OI	Raw data (NELAC Section 5.5.10)	The state of the s	-	-					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an					_			
		analyst?								
		Were data associated with manual integ	trations flanged on the raw data?	X	1		-			
S6	0	Dual column confirmation	rations nagged on the law data:	A			-			
	-	Did dual column confirmation results meet the method-required QC?			Τx	T				
S7	0	Tentatively identified compounds (TI			1 /					
Ų,	-		spectra and TIC data subject to appropriate		1					
		checks?	pooling and the date subject to appropriate		X					
S8	1	Interference Check Sample (ICS) resi	ults		-					
		Were percent recoveries within method			Ιx	1				
S9		Serial dilutions, post digestion spike		1	1./					
		Were percent differences, recoveries, as			1					
		specified in the method?	to the inteatry within the QO inting		X					
S10	OI	Method detection limit (MDL) studies	A		_		_			
414	- 0.	Was a MDL study performed for each re		X	1		_			
		Is the MDL either adjusted or supported	A CONTRACTOR OF THE PARTY OF TH	X	1		5			
S11	OI	Proficiency test reports	by the dialysis of Boco.	^ 1	-		_			
0.11	- 0.		otable on the applicable proficiency tests or	-7.1	7	- 1	_			
		evaluation studies?	X							
S12	OI	Standards documentation			_					
UIL	01	Are all standards used in the analyses N	VIST-traceable or obtained from other			T	-			
		appropriate source?	no. Laccable of obtained from other	X						
S13	OI	Compound/analyte identification pro-	cedures							
010	01	Are the procedures for compound/analy		X	-	T	-			
S14	OI	Demonstration of analyst competence		A.						
917	- 01	Was DOC conducted consistent with NI		Х	1	T				
		Is documentation of the analyst's compe		X	+		_			
S15	OI	Verification/validation documentation				بالسا				
010	- OI	Are all the methods used to generate the			1	- 1				
		validated, where applicable?	s data documentated, vermed, and	X						
S16	01	Laboratory standard operating proce	eduras (SOBs)							
		IL AUDITAIDLY STANDARD ODERATING DROCE	SHIPS (SUPS)							



Laboratory Name:		Accutest Gulf Coast	LRC Date:	8/29/2012
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC14964
Reviewer	Name: Anita Patel		Prep Batch Number(s):	GSS178, VK449
ER#1	Descript	ion		
1	blank. Th	ting purposes, the MQL is defined in the e SDL is defined in the report as the MI	DL.	
2		ting purposes, the method blank repres in the laboratory data package.	ents the unadjusted MQL. The DCS is	s on file in the laboratory and is not
3		atory is NELAC-accredited under the T associated with this laboratory data pac		
4	All anoma	alies are discussed in the case narrative		
5		ratory does not perform DCS analysis for ve values in the Texas TRRP PCL table		emponents reported are not listed of

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS Volatiles	
QC Data Summaries	

#### Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

TC14964-1

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l
108-88-3	Toluene	ND	1.0	0.26	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l

CAS No.	Surrogate Recoveries		Limits	
1868-53-7	Dibromofluoromethane	101%	79-122%	
17060-07-0	1,2-Dichloroethane-D4	96%	75-121%	
2037-26-5	Toluene-D8	102%	87-119%	
460-00-4	4-Bromofluorobenzene	123%	80-133%	

Page 1 of 1

Method: SW846 8260B

Method: SW846 8260B

# Blank Spike Summary Job Number: TC14964

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

VK449-BS K10024.D 1 08/23/12 EM n/a n/a VK	
	449

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC14964

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

TC14964-1

		TC14974-3	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12
CAS No.	Surrogate Recoveries	MS	MSD	TO	C14974-3	Limits			
1868-53-7	Dibromofluoromethane	99%	99%	10	0%	79-1229	%		

95%

102%

122%

96%

102%

121%

75-121%

87-119%

80-133%

96%

103%

122%

4-Bromofluorobenzene

17060-07-0 1,2-Dichloroethane-D4

2037-26-5 Toluene-D8

460-00-4



<sup>(</sup>a) Sample was not preserved to a pH < 2

<sup>\* =</sup> Outside of Control Limits.



QC Da	ta Summ	aries	

#### Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Method: RSKSOP-147/175

# Blank Spike Summary Job Number: TC14964

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	<b>DF</b>	<b>Analyzed</b> 08/27/12	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1		LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

#### Matrix Spike Summary

Job Number: TC14964

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

		TC14970-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits
74-82-8	Methane	914 b	21.5	600	-337* a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

<sup>(</sup>a) Outside control limits due to high level in sample relative to spike amount.



<sup>(</sup>b) Result is from Run #2.

<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

## **Duplicate Summary** Job Number: TC14964

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14964-1

		TC14970-1	DUP				
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits	
74-82-8	Methane	914 <sup>a</sup>	869	E	26	30	
74-85-1	Ethene	1.0 U	ND		nc	30	
74-84-0	Ethane	42.3	57.4		30	30	
74-98-6	Propane	1.5 U	ND		nc	30	
75-28-5	Isobutane	1.5 U	ND		nc	30	
106-97-8	Butane	1.5 U	ND		nc	30	

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



#### ANALYSIS REPORT

Lab #: 261147 Job #: 19036

Sample Name/Number: WW20-HUF-081912

Company: Oil Tracers, LLC

Date Sampled: 8/19/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	δ <sup>13</sup> C ‰	δD ‰	δ <sup>18</sup> Ο ‰
Carbon Monoxide	nd	-		
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.53			
Oxygen	0.076			
Nitrogen	87.65			
Carbon Dioxide	0.18			
Methane	10.53	-44.92	-152.3	
Ethane	0.0371			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	0.0004			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 107

Specific gravity, calculated: 0.931

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12



#### **Technical Report for**

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW14A-HUR

Accutest Job Number: TC14970

Sampling Date: 08/18/12

#### Report to:

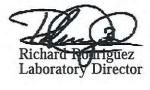
EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

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### Sample Summary

EarthCon Consultants

Job No:

TC14970

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW14A-HUR

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
TC14970-1	08/18/12	15:09	08/21/12	AQ	Ground Water	WW14A-HUR-081812
TC14970-1D	08/18/12	15:09	08/21/12	AQ	Water Dup/MSD	WW14A-HUR-081812 MSD
TC14970-1S	08/18/12	15:09	08/21/12	AQ	Water Matrix Spike	WW14A-HUR-081812 MS



#### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14970

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:56:51 PM

1 Sample was collected on 08/18/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14970. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VZ3732

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



# Summary of Hits Job Number: TC14970

Page 1 of 1

Account: EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas 08/18/12 Project:

Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14970-1	WW14A-HUR-081	1812				
Methane		0.914	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0423	0.0010	0.00050	mg/l	RSKSOP-147/175





<b>.</b>	C 4 1 .	
Report of	f Analysis	



#### Report of Analysis

Client Sample ID: WW14A-HUR-081812

 Lab Sample ID:
 TC14970-1
 Date Sampled:
 08/18/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732
Run #2							

Purge Volume
Run #1 5.0 ml
Run #2

#### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	104%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	96%		75-121%		
2037-26-5	Toluene-D8	107%		87-119%		
460-00-4	4-Bromofluorobenzene	113%		80-133%		

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Client Sample ID: WW14A-HUR-081812

 Lab Sample ID:
 TC14970-1
 Date Sampled:
 08/18/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

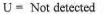
Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.914 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0423	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/I	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

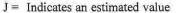
(a) Result is from Run# 2



SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range



B = Indicates analyte found in associated method blank





N = Indicates presumptive evidence of a compound



Custody Document	ts and Other Forms
Includes the following	where applicable:

LRC Form



U

TC14970: Chain of Custody Page 1 of 3





#### Accutest Laboratories Sample Receipt Summary

Page 1 of 2

	012		Delivery I	Vietho	d:	FedEx	Airbill #'s: 801561645028				
No. Coolers: 1	Therm I	D: IRGUN5	;				Temp Adjustment Factor:	-0.4;			
Cooler Temps (Initial/Adjusted	i): <u>#1: (</u>	2.3/1.9);									
	or N				or N		grity - Documentation	Y	or	N	
Custody Seals Present:		3. COC P	100000	V		1. Outlipic las	els present on bottles:	V			
2. Custody Seals Intact:		4. Smpl Date	ss/Time OK	V		2. Container	abeling complete:	$\checkmark$			
Cooler Temperature	Y or	N				3. Sample co	ntainer label / COC agree:	V			
1. Temp criteria achieved:	$\checkmark$					Sample Inte	grity - Condition	Y	or	N	
Cooler temp verification:						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	evd within HT:	V			
Cooler media:	Ice (	(Bag)					ers accounted for:			П	
Quality Control Preservation	Y o	r N N/A		WTB	STE				Intac	_	
1. Trip Blank present / cooler:	<b>V</b>			~		Sample Inte	egrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						1. Analysis r	equested is clear:	V			
3. Samples preserved properly:						2. Bottles rea	ceived for unspecified tests			<b>V</b>	
4. VOCs headspace free:	V					3. Sufficient	volume recvd for analysis:	V			
						4. Compositi	ng instructions clear:				V
						5. Filtering in	structions clear:				V

TC14970: Chain of Custody Page 2 of 3







#### Sample Receipt Log

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
at.	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14970: Chain of Custody

Page 3 of 3



## N

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App	endix A	Laboratory	Data	<b>Package</b>	Cover	Page
TC14970	This data package co	nsists of				

This signature page, the laboratory review checklist, and the following reportable data: Field chain-of-custody documentation; R2 Sample identification cross-reference; Ü R3 Test reports (analytical data sheets) for each environmental sample that includes: Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10 a) b) dilution factors. preparation methods. C) d) cleanup methods, and e) if required for the project, tentatively identified compounds (TICs). R4 J Surrogate recovery data including: Calculated recovery (%R), and a) b) The laboratory's surrogate QC limits. **R5** Test reports/summary forms for blank samples; Ū R6 Test reports/summary forms for laboratory control samples (LCSs) including: a) LCS spiking amounts, b) Calculated %R for each analyte, and The laboratory's LCS QC limits. C) П R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: a) Samples associated with the MS/MSD clearly identified, b) MS/MSD spiking amounts, Concentration of each MS/MSD analyte measured in the parent and C) Calculated %Rs and relative percent differences (RPDs), and d) The laboratory's MS/MSD QC limits e) Laboratory analytical duplicate (if applicable) recovery and precision: H R8 a) The amount of analyte measured in the duplicate, b) The calculated RPD, and C) The laboratory's QC limits for analytical duplicates. R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each R10 Other problems or anomalies. The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program. Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by [] on April 2011. Any findings affecting the data in this laboratory data package are [X]TCEQ or []\_ noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true. **QA Manager** Name (Printed) Signature Official Title (printed) Date Richard Rodriguez Laboratory Director 8/29/2012



aboratory			CHECKLIST: REPORTABLE  LRC Date:		9/20	112		_
aboratory	I VELLIO,	Quarterly Well Sampling, Parker	LING Date.	0/2	3120	112		_
roject Na	me:	County, Texas	Laboratory Project Number:	I TO	149	70		
Reviewer		Anita Patel	Prep Batch Number(s):	1	_	VZ37	22	-
#1	A <sup>2</sup>	DESCRIPTION	Prep Batch Number(s).				NR° E	= 0
R1	OI	CHAIN-OF-CUSTODY (C-O-C):		150	INO	INA	INK IE	=1
IV.I	Oi.	Did samples meet the laboratory's sta		_			-	
		upon receipt?	X					
			anditions described in an execution report?	X	-	-	-	-
	- 01		nditions described in an exception report?	^		5		_
R2	OI	Sample and quality control (QC) id					-	
		Are all field sample ID numbers cross	X		1.5	100		
			eferenced to the corresponding QC data?	X		-		
R3	01	Test reports						
		Were samples prepared and analyze	X		1.3			
		Other than those results <mql, td="" were<=""><td>x</td><td></td><td></td><td></td><td></td></mql,>	x					
		standards?	Library Committee of the Committee of th	13.4				
		Were calculations checked by a peer	X	-		() b		
		Were all analyte identifications check		Х				
		Were sample detection limits reported		X		1 = 1		
		Were all results for soil and sediment			Х		Ξ	
		Were % moisture (or solids) reported	for all soil and sediment samples?			Х	- Y	
		Were bulk soils/solids samples for vo	latile analysis extracted with methanol per			~		
		SW846 Method 5035?				Х		
		If required for the project, are TIC's re	ported?			X		0
R4	0	Surrogate recovery data						
		Were surrogates added prior to extra	ction?	X	(TIL)			
		Were surrogate percent recoveries in	all samples within the laboratory QC limits?	X			5 - 1	
R5	OI	Test reports/summary forms for bl	ank samples		1			
		Were appropriate type(s) of blanks ar	nalyzed?	X	11			
		Were blanks analyzed at the appropri	iate frequency?	X	1			
		Were method blanks taken through the	ne entire analytical process, including					
		preparation and, if applicable, cleanu	p procedures?	X				
		Were blank concentrations <mql?< td=""><td>X</td><td></td><td></td><td></td><td>_</td></mql?<>		X				_
R6	OI	Laboratory control samples (LCS):		100				
		Were all COCs included in the LCS?		X	11			Τ
		Was each LCS taken through the ent	ire analytical procedure, including prep and		717		- 1-	_
		cleanup steps?	200	X				
		Were LCSs analyzed at required freq	uency?	Х	111			_
		Were LCS (and LCSD, if applicable)	%Rs within the laboratory QC limits?	X	7.5			_
		Does the detectablility check sample	data document the laboratory's capability to	14	TIT			-
		detect the COCs at the MDL used to	calculate the SDLs?	X				
		Was the LCSD RPD within QC limits'	?		ΜĬ	X		Т
R7	OI	Matrix spike (MS) and matrix spike	duplicate (MSD) data	1				
		Were the project/method specified an		X	111			_
		Were MS/MSD analyzed at the appro		X				-
		Were MS (and MSD, if applicable) %			Х	il (		-
		Were the MS/MSD RPDs within labor		X		- 2		_
R8	OI	Analytical duplicate data					- 75	
		Were appropriate analytical duplicate	s analyzed for each matrix?	Х	113	17. 2		
		Were analytical duplicates analyzed a		X			-	-
			ations within the laboratory QC limits?	X		- 1		-
R9	OI	Method quantitation limits (MQLs):		^			_	
			e included in the laboratory data package?	X				
			entration of the lowest non-zero calibration	x			-	-
		Are unadjusted MQLs and DCSs incli		^	х		-	2
R10	OI	Other problems/anomalies	asse in the laboratory data package:					ŕ
, (10	- OI		ecial conditions noted in this LRC and ER?	X		1	-	=
	- 1		ogy used to lower the SDL to minimize the	X				-
			nder the Texas Laboratory Accreditation	^				_
			nder the Texas Laboratory Accreditation nd methods associated with this laboratory	х				
								3



Laboratory Name: Project Name:		Accutest Gulf Coast LRC Date:	8/29/2012 TC14970			
		Quarterly Well Sampling, Parker Laboratory Project Number:	12.00			
Reviewer		Anita Patel Prep Batch Number(s):		8, VZ37		
#1	A <sup>2</sup>	DESCRIPTION	YESIN	IO NA	NR4 ER	
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X	1.		
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X	5 To 2		
		Were all points generated between the lowest and highest standard used to	x			
		calculate the curve?				
		Are ICAL data available for all instruments used?	X	-		
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	01	Initial and continuing calibration verification (ICCV AND CCV) and continuing	Part Line	-	-175	
		Was the CCV analyzed at the method-required frequency?	X	1		
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td>Х</td><td></td></mdl?<>		Х		
S3	0	Mass spectral tuning	1	27.0	Carrie	
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X	4 120		
S4 0		Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an	x	-1		
		analyst?	1.387			
		Were data associated with manual integrations flagged on the raw data?	X	E TIL		
S6	0	Dual column confirmation	1	-		
		Did dual column confirmation results meet the method-required QC?		X	1 ( )	
S7 O		Tentatively identified compounds (TICs):	1	700		
	If TICs were requested, were the mass spectra and TIC data subject to appro			X		
S8	1	checks?				
50		Interference Check Sample (ICS) results	Party.	LV		
S9		Were percent recoveries within method QC limits?		X		
29		Serial dilutions, post digestion spikes, and method of standard additions		1000		
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X		
S10	OI	Method detection limit (MDL) studies				
010	Oi.	Was a MDL study performed for each reported analyte?	X	10.00		
		Is the MDL either adjusted or supported by the analysis of DCSs?	x	1	5	
S11	OI	Proficiency test reports	^			
011	- 01	Was the laboratory's performance acceptable on the applicable proficiency tests or	100			
		evaluation studies?	X			
S12	OI	Standards documentation	1	-		
		Are all standards used in the analyses NIST-traceable or obtained from other	1.55			
		appropriate source?	X			
S13	01	Compound/analyte identification procedures		-		
		Are the procedures for compound/analyte identification documented?	X		17.	
S14	OI	Demonstration of analyst competency (DOC)	100	7 5	-3-	
		Was DOC conducted consistent with NELAC Chapter 5?	X	$  \cdot   = 1$	4	
	1-1	Is documentation of the analyst's competency up-to-date and on file?	X	iiii ii	10.1	
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)		-		
	177	Are all the methods used to generate the data documentated, verified, and	X			
		validated, where applicable?	^			
S16	01	Laboratory standard operating procedures (SOPs)	1	100		
		Are laboratory SOPs current and on file for each method performed?	X			

		Accutest Gulf Coast	LRC Date:	8/29/2012					
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC14970					
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS178, VZ3732					
ER#	Descrip	tion							
1		rting purposes, the MQL is defined in the ne SDL is defined in the report as the MI		QL/RL is reported in the method					
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.								
3		ratory is NELAC-accredited under the T associated with this laboratory data pac							
4	All anom	alies are discussed in the case narrative							
5		oratory does not perform DCS analysis f ave values in the Texas TRRP PCL table		omponents reported are not listed o					

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS Volatiles	
QC Data Summaries	

- Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14970-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	
CAS No.	Surrogate Recoveries		Limi	ts		
1868-53-7	Dibromofluoromethane	106%	106% 79-122%			
17060-07-0	1,2-Dichloroethane-D4	98%	75-12	21%		
2037-26-5	Toluene-D8	106%	87-11	9%		
460-00-4	4-Bromofluorobenzene	114%	80-13	3%		



Method: SW846 8260B

#### Blank Spike Summary

Job Number: TC14970

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	<b>DF</b>	<b>Analyzed</b> 08/24/12	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1		AK	n/a	n/a	VZ3732

80-133%

The QC reported here applies to the following samples:

4-Bromofluorobenzene

TC14970-1

460-00-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111
CAS No.	Surrogate Recoveries	BSP	Li	mits	
1868-53-7	Dibromofluoromethane	99%	79-122%		
17060-07-0	1,2-Dichloroethane-D4	90%	75	-121%	
2037-26-5	Toluene-D8	103%	87-	-119%	

109%



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

# Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC14970

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

TC14970-1

CAS No.	Compound	TC149' ug/l	70-1 Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U		25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U		25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U		25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U		75	74.1	99	72.6	97	2	75-111/12
CAS No.	Surrogate Recoveries	MS		MSD	T	C14970-1	Limits			

CAS No	. Surrogate Recoveries	MS	MSD	TC14970-1	Limits
1868-53-	7 Dibromofluoromethane	107%	106%	104%	79-122%
17060-0	7-0 1,2-Dichloroethane-D4	94%	93%	96%	75-121%
2037-26-	-5 Toluene-D8	107%	107%	107%	87-119%
460-00-4	4-Bromofluorobenzene	113%	113%	113%	80-133%



<sup>\* =</sup> Outside of Control Limits.



QC Data Summaries	

- Includes the following where applicable:
- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary Job Number: TC14970

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14970-1

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/I



Page 1 of 1

Method: RSKSOP-147/175

# Blank Spike Summary Job Number: TC14970

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample GSS178-BS	<b>File ID</b> SS003615.D	<b>DF</b> 1	<b>Analyzed</b> 08/27/12	By LT	Prep Date n/a	Prep Batch n/a	Analytical Batch GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14970-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

# Matrix Spike Summary Job Number: TC14970

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14970-1

		TC14970-1	Spike	MS	MS		
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits	
74-82-8	Methane	914 b	21.5	600	-337* a	60-140	
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140	
74-84-0	Ethane	42.3	43.3	71.7	68	60-140	
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140	
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140	
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140	

<sup>(</sup>a) Outside control limits due to high level in sample relative to spike amount.



<sup>(</sup>b) Result is from Run #2.

<sup>\* =</sup> Outside of Control Limits.

## **Duplicate Summary** Job Number: TC14970

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batcl
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14970-1

		TC14970-1	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	914 <sup>a</sup>	869	Е	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.

<sup>\* =</sup> Outside of Control Limits.



#### ANALYSIS REPORT

Lab #: 261145 Job #: 19036

Sample Name/Number: WW14A-HUR-081812

Company: Oil Tracers, LLC

Date Sampled: 8/18/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	δ <sup>13</sup> C ‰	δD ‰	δ <sup>18</sup> Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.49			
Oxygen	0.039			
Nitrogen	86.10			
Carbon Dioxide	0.41			
Methane	11.72	-42.62	-130.8	
Ethane	0.242	-24.8		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	0.0007			
N-pentane	nd			
Hexanes +	0.0004			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 123

Specific gravity, calculated: 0.927

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.72

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12



#### **Technical Report for**

#### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW15-HUR

Accutest Job Number: TC14959

Sampling Date: 08/18/12

#### Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



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# Sample Summary

EarthCon Consultants

Job No:

TC14959

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW15-HUR

Sample Collected			Matrix	Client	
Number	Date	Time By	Received	Code Type	Sample ID
TC14959-1	08/18/12	16:20	08/21/12	AO Ground Water	WW15-HIR-081812





#### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14959

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:46:20 PM

1 Sample was collected on 08/18/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14959. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VK449

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSK SOP-147/175

Matrix AQ Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



# Summary of Hits Job Number: TC14959

Page 1 of 1

Account: EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Collected: 08/18/12

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14959-1	WW15-HUR-0818	12				
Methane		1.48	0.025	0.015	mg/l	RSKSOP-147/175
Ethane		0.154	0.0010	0.00050	mg/l	RSKSOP-147/175





Report of Analysis	



### Report of Analysis

Client Sample ID: WW15-HUR-081812

 Lab Sample ID:
 TC14959-1
 Date Sampled:
 08/18/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch
Run #1 K10045.D 1 08/23/12 EM n/a n/a VK449
Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/1	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	101%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	95%		75-121%		
2037-26-5	Toluene-D8	103%		87-119%		
460-00-4	4-Bromofluorobenzene	124%		80-133%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Client Sample ID: WW15-HUR-081812

 Lab Sample ID:
 TC14959-1
 Date Sampled:
 08/18/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

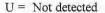
Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003623.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003624.D	50	08/27/12	LT	n/a	n/a	GSS178

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	1.48 a	0.025	0.015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.154	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2



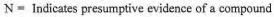
SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range



B = Indicates analyte found in associated method blank









Includes the following where applicable:

- · Chain of Custody
- LRC Form



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		CHAIN OF CUSTODY													PAGE OF									
SACCUTEST.			10165 Ha										1	FED-EX	Tracking	8		_		Bottle O	rder Con	arol F		
			TEL. 71	3-271-470 www.	O FAX		-271-4	4770						Acculest	Quote #					Accutest Job # TO 14959				
Client / Reporting Information			Project	Informa		-	242	影響	诗题			りに	e A				Rec	ues	ted	Ana	lvse	-		Matrix Codes
Company Name	Project Name:														5			100						William Codes
EarthCon Consultants, Inc.	Second Quar	terly Well Sa	mpling, Parke	er Count	y, Tex	as									Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175					11.0				
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TC14959: Chain of Custody Page 1 of 3



### Accutest Laboratories Sample Receipt Summary

Page 1 of 2

No. Coolers: 1 Therm ID: IRGUN5; Temp Adjustment Factor: -0.4;  Cooler Temps (Initial/Adjusted): #1: (2.3/1.9);  Cooler Security Y or N	ate / Time Received: 8/21/2	2012		Delivery I	Method	:	FedEx	Airbill #'s: 801561645028				
Cooler Security  Y or N  1. Custody Seals Present:	o. Coolers: 1	Therm ID:	IRGUN5;					Temp Adjustment Factor:	-0.4;			
1. Custody Seals Present:	ooler Temps (Initial/Adjusted	d): #1: (2.3	3/1.9);									
2. Custody Seals Intact:		or N				or N	Sample Int	egrity - Documentation	_Y	or	N	
Sample container label / COC agree:	Canada Anna Canada			400000			1. Sample la	bels present on bottles:	~			
1. Temp criteria achieved:	. Custody Seals Intact:	_ 4	. Smpl Dates	/Time OK	<b>V</b>		2. Container	labeling complete:	~			
2. Cooler temp verification:  3. Cooler media:  1. Sample recvd within HT:  2. All containers accounted for:  3. Condition of sample:  1. Trip Blank present / cooler:  2. Trip Blank listed on COC:  3. Samples preserved properly:  4. VOCs headspace free:  2. Cooler temp verification:  1. Sample recvd within HT:  2. All containers accounted for:  3. Condition of sample:  1. Analysis requested is clear:  2. Bottles received for unspecified tests  3. Sufficient volume recvd for analysis:	ooler Temperature	Y or M	1_				3. Sample c	ontainer label / COC agree:	V			
3. Cooler media:   Ice (Bag)   2. All containers accounted for:   2. All containers accounted for:   3. Condition of sample:   Intact    1. Trip Blank present / cooler:                            2. Trip Blank listed on COC;                      3. Samples preserved properly:                    4. VOCs headspace free:                        1. Sample recvd within H1:              2. All containers accounted for:              3. Condition of sample:              4. Analysis requested is clear:              2. Bottles received for unspecified tests            3. Sufficient volume recvd for analysis:		V					Sample Int	egrity - Condition	Y	or	N	
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Quality Control Preservation     Y or N     N/A     WTB STB     3. Condition of sample:     Intact       1. Trip Blank present / cooler:     Image: Cooler in the preservation of sample:     Intact     Sample Integrity - Instructions     Y or N       2. Trip Blank listed on COC:     Image: Cooler in the preservation of sample:     Intact     Sample Integrity - Instructions     Y or N       3. Samples preserved properly:     Image: Cooler in the preserved for unspecified tests     Image: Cooler in the preserved for analysis:     Image: Cooler in the preserved for analysis:       4. VOCs headspace free:     Image: Cooler in the preserved for analysis:     Image: Cooler in the preserved for analysis:     Image: Cooler in the preserved for analysis:	3. Cooler media:	Ice (Ba	g)				The second of the second		V			
2. Trip Blank listed on COC:  3. Samples preserved properly:  4. VOCs headspace free:  2. Sample integrity - Instructions  4. Analysis requested is clear:  2. Bottles received for unspecified tests  3. Sufficient volume recvd for analysis:	uality Control Preservation	Y or	N N/A		WTB	STB	3. Condition	of sample:		Intac		
2. Trip Blank listed on COC: □ ☑ □ □ 1. Analysis requested is clear: □ □ □ 3. Samples preserved properly: ☑ □ □ 2. Bottles received for unspecified tests □ ☑ □ □ □ 3. Sufficient volume recvd for analysis: ☑ □	Trip Blank present / cooler:				$\overline{\mathbf{Z}}$		Sample Int	earity - Instructions	Y	or	N	N/A
3. Samples preserved properly:   □ □ □ 2. Bottles received for unspecified tests □ □  4. VOCs headspace free: □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	2. Trip Blank listed on COC:						1. Analysis	requested is clear:				
4. VOCs headspace free:   3. Sufficient volume recvd for analysis:	3. Samples preserved properly:		1				2. Bottles re	ceived for unspecified tests				
	4. VOCs headspace free:		1 0				3. Sufficient	volume recvd for analysis:	~			
4. Compositing instructions clear:							4. Composi	ting instructions clear:				V
5. Filtering instructions clear:							5. Filtering	nstructions clear:	П			V

TC14959: Chain of Custody Page 2 of 3



### Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	ple ID: Vol Bot# Location Pres pH		Therm ID	Initial Temp	Therm	Corrected Temp			
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	879-2 4oz 2 2-90 N/P Note #2 - Preservative check not applicable.		IRGUN5	24.5	-0.4	24.1			
1	TC13879-3	4oz	-1-	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
31	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24,5	-0.4	24.1

TC14959: Chain of Custody

Page 3 of 3



5.1

# Appendix A Laboratory Data Package Cover Page TC14959 This data package consists of

1.1	Inis sig	nature page, the laboratory re	view checklist, and the following reportable d	ata:
Ç	R1	Field chain-of-custody doc	cumentation;	
Ç	R2	Sample identification cross	s-reference;	
C	R3	Test reports (analytical da	ta sheets) for each environmental sample tha	t includes:
		a)	Items consistent with NELAC 5.1	
		b)	dilution factors,	3 01 130/IEC 17023 Section 3.10
		c)	preparation methods,	
		d)	cleanup methods, and	A Parallel Commence of the Com
- 2	200	e)	if required for the project, tentative	ely identified compounds (TICs).
À	R4	Surrogate recovery data in		
		a)	Calculated recovery (%R), and	
		b)	The laboratory's surrogate QC lin	nits.
1.0	R5	Test reports/summary form		
Q	R6	Test reports/summary form	ns for laboratory control samples (LCSs) inclu	iding:
		a)	LCS spiking amounts,	- 11.7
		b)	Calculated %R for each analyte,	and
		c)	The laboratory's LCS QC limits.	
ū	R7		trix spike/matrix spike duplicates (MS/MSDs)	including:
	1112	a)	Samples associated with the MS/	
		b)	MS/MSD spiking amounts,	WIGD clearly identified,
		c)		molydo moogy god in the passed and
		d)		nalyte measured in the parent and
			Calculated %Rs and relative perc	
-	20	e)	The laboratory's MS/MSD QC lim	its
Ġ	R8		cate (if applicable) recovery and precision:	
		a)	The amount of analyte measured	in the duplicate,
		b)	The calculated RPD, and	
		c)	The laboratory's QC limits for ana	
Ţ	R9	List of method quantitation	limits (MQLs) and detectability check sample	e results for each analyte for each
ū	R10	Other problems or anomali	es.	
The Exc	ception Rep	ort for each "No" or "Not Revie	wed (NR)" item in Laboratory Review Checkli	ist and for each analyte, matrix, and
method	for which th	ne laboratory does not hold NE	LAC accreditation under the Texas Laborator	v Accreditation Program
				, 1 1021 0211211011, 7 1 0g1 22111
Polones	Statemen	t: I am reconneible for the rele	nan afficia labanetan, data analysis. This lat	
Towas	charatan A	it. I am responsible for the rele	ease of this laboratory data package. This lab	poratory is NELAC accredited under the
rexas L	aboratory A	ccreditation Program for all the	e methods, analytes, and matrices reported in	this data package except as noted in
the Exce	eption Repo	ort. I his data package has bee	n reviewed by the laboratory and is complete	and technically compliant with the
requiren	nents of the	methods used, except where	noted by the laboratory in the attached excep	tion reports. By my signature below, I
affirm to	the best of	my knowledge, all problems/a	nomalies, observed by the laboratory as havi	ng the potential to affect the quality of
the data	, have been	identified by the laboratory in	the Laboratory Review Checklist, and no info	mation or data have been knowingly
withheld	l.			
Check,	if applicab	le: This laboratory meets an e	xception under 30 TAC&25.6 and was last in	spection by
[]				
20.		[X] ICEQ of []	on April 2011. Any findings affecting the data	in this laboratory data package are
		noted in the Exception Rep	orts herein. The official signing the cover page	ge of the report in which these data are
			easing this data package and is by signature	affirming the above release statement
40.0		is true.		
QA Man				
Name (F	Printed)	Signature	Official Title (printed)	Date
		STAN		
Richard	Rodriguez	- then 3	Laboratory Director	8/29/2012
		0		



aboratory		Accutest Gulf Coast	HECKLIST: REPORTABLE		29/20	112	_	_
aborator)	ritalio.	Quarterly Well Sampling, Parker	LIVO Date.	1 0/2	23121	112	_	_
roject Na	me.	County, Texas	Laboratory Project Number:	70	149	FO		
eviewer		Anita Patel		_				_
#1	A <sup>2</sup>	DESCRIPTION	Prep Batch Number(s):	GSS178, VK449 YES NO NA3 NR4 ER				
				YES	NO	NA*	NR.	E
R1	OI	CHAIN-OF-CUSTODY (C-O-C):		-				
			andard conditions of sample acceptability	X				
		upon receipt?		1.1				
			nditions described in an exception report?	X				
R2	OI	Sample and quality control (QC) id-						
		Are all field sample ID numbers cross	-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-re	eferenced to the corresponding QC data?	X				
R3	OI	Test reports						
		Were samples prepared and analyze	d within holding times?	Х	1			
			all other raw values bracketed by calibration		1			$\vdash$
		standards?	an outer ran values bracketed by sampration	X				
		Were calculations checked by a peer	or supervisor?	X				⊢
		Were all analyte identifications check		X				-
		Were sample detection limits reported					-	$\vdash$
				X	-	1.2		-
			samples reported on a dry weight basis?			X		L
		Were % moisture (or solids) reported	for all soil and sediment samples?			X		
			latile analysis extracted with methanol per			x		
		SW846 Method 5035?	24.10			500		
54	-	If required for the project, are TIC's re	ported?			X		
R4	0	Surrogate recovery data						
	177	Were surrogates added prior to extract		X				
	1 14		all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for bla	ank samples					
		Were appropriate type(s) of blanks an	alyzed?	X	1 1	151	-	
		Were blanks analyzed at the appropri	ate frequency?	X		1.21		
		Were method blanks taken through th	e entire analytical process, including					Т
		preparation and, if applicable, cleanur	procedures?	Х				-
		Were blank concentrations <mql?< td=""><td></td><td>Х</td><td></td><td></td><td></td><td></td></mql?<>		Х				
R6	OI	Laboratory control samples (LCS):		7				
		Were all COCs included in the LCS?		Х				_
			re analytical procedure, including prep and					_
		cleanup steps?	re analytical procedure, moldaling prep and	X			10.1	
		Were LCSs analyzed at required frequ	iency?	Х				-
		Were LCS (and LCSD, if applicable)			-			÷
		Does the detectability shock comple	data document the laboratory's capability to	Х	-			_
				Х				
		detect the COCs at the MDL used to d		100				
-		Was the LCSD RPD within QC limits?			-	X		
R7	OI	Matrix spike (MS) and matrix spike				1011		
		Were the project/method specified and		X	- 1			13
		Were MS/MSD analyzed at the appro-		Х				L
		Were MS (and MSD, if applicable) %F		1	X		i T	L
		Were the MS/MSD RPDs within labor	atory QC limits?	Х		5-51		
R8	OI	Analytical duplicate data		1		1	-	
		Were appropriate analytical duplicates	s analyzed for each matrix?	Х		5 7 1	1	
- 1		Were analytical duplicates analyzed a	t the appropriate frequency?	X				
		Were RPDs or relative standard devia		X				-
R9	OI	Method quantitation limits (MQLs):				-		
-			included in the laboratory data package?	V	- 1	-	-	-
		Do the MOI s correspond to the conce	ntration of the lowest non-zero calibration	X	-			
		Are unadjusted MQLs and DCSs inclu	ided in the laboratory data applicant	Х	14			H
R10	OI	Other problems/anomalies	ided in the laboratory data package?		X		11	1.5
KIU	OI .	Are all known problems/anomalies	valid bandward and to the BA	1		-	=	
		Mos opplicable or desired	ecial conditions noted in this LRC and ER?	X		-		
-	_		ogy used to lower the SDL to minimize the	Х	_			
			nder the Texas Laboratory Accreditation d methods associated with this laboratory	x				



	oratory Name: Accutest Gulf Coast LRC Date:		8/29/2012					
Project Name: Quarterly Well Sampling,		Quarterly Well Sampling, Parket		TC14959 GSS178, VK449				
Reviewer		Anita Patel	Prep Batch Number(s):	GSS17	8, VK44	9		
#1	A <sup>2</sup>	DESCRIPTION		YES N	IO NA3 I	NR <sup>4</sup> ER #		
S1	01	Initial calibration (ICAL)						
		Were response factors and/or relativ limits?	e response factors for each analyte within QC	х				
		Were percent RSDs or correlation co	pefficient criteria met?	X				
			mended in the method used for all analytes?	X				
		Were all points generated between t calculate the curve?	he lowest and highest standard used to	x				
		Are ICAL data available for all instrui	ments used?	X	+			
			verified using an appropriate second source	- 41	1	-		
		standard?	The second and appropriate control of the second control of the se	X	4 - 1			
S2	OI		rerification (ICCV AND CCV) and continuing		-			
		Was the CCV analyzed at the metho		X	T			
			nalyte within the method-required QC limits?	X		_		
		Was the ICAL curve verified for each		X				
			e concentration in the inorganic CCB <mdl?< td=""><td>^</td><td>X</td><td></td></mdl?<>	^	X			
S3	0	Mass spectral tuning	e concentration in the morganic COD-WDE!		1.			
		Was the appropriate compound for the	he method used for tuning?	Х	1 1			
		Were ion abundance data within the		X	1			
S4	0	Internal standards (IS)	metrod-required QC limits:	^	_	-		
			mes within the method-required QC limits?	X		-		
S5	OI	Raw data (NELAC Section 5.5.10)	nee within the method-required QC infines:	^		_		
	0.		omatograms, spectral data) reviewed by an		1 1	7		
	12.0	analyst?	ornatograms, spectral data/ reviewed by all	X				
			tegrations flagged on the row data?	X				
S6	0		Were data associated with manual integrations flagged on the raw data?  Dual column confirmation					
	-	Did dual column confirmation results meet the method-required QC?			X	7		
S7	0	Tentatively identified compounds (TICs):			1.			
	-		f TICs were requested, were the mass spectra and TIC data subject to appropriate		T			
		checks?	so specific and the data subject to appropriate		X			
S8		Interference Check Sample (ICS)	esults	Section 1				
		Were percent recoveries within meth			I X I	7		
S9	1	Serial dilutions, post digestion spi	kes, and method of standard additions		1.			
	-	Were percent differences, recoveries	, and the linearity within the QC limits		Jacob I			
		specified in the method?	and the infeatity within the GO infines		X			
S10	OI	Method detection limit (MDL) stud	ies	-	1			
		Was a MDL study performed for each		X	1	7		
		Is the MDL either adjusted or suppor		X		5		
S11	OI	Proficiency test reports	to a construction of a constru	^	-	1		
		Was the laboratory's performance ac	ceptable on the applicable proficiency tests or		1			
		evaluation studies?	and the second of the second of	X				
S12	OI	Standards documentation		100				
		Are all standards used in the analyse	s NIST-traceable or obtained from other	Fo. C				
		appropriate source?		X				
S13	01	Compound/analyte identification p	rocedures		-			
		Are the procedures for compound/an	alyte identification documented?	X	1 1			
S14	OI	Demonstration of analyst compete						
	-	Was DOC conducted consistent with		х				
		Is documentation of the analyst's con		X	121			
S15	OI		ion for methods (NELAC Chapter 5)					
			the data documentated, verified, and	1551	1 1	1		
		validated, where applicable?	- Walter Justine Control of Control and Control	X				
S16	OI	Laboratory standard operating pro	ocedures (SOPs)					
		Are laboratory SOPs current and on f		ΧI	1100			



/ Name:	Accutest Gulf Coast	LRC Date:	8/29/2012
me:	Quarterly Well Sampling, Parket	Laboratory Project Number:	TC14959
Name:	Anita Patel	Prep Batch Number(s):	GSS178, VK449
Descrip	tion		
blank. Th	ne SDL is defined in the report as the M	IDL.	
		sents the unadjusted MQL. The DCS is	s on file in the laboratory and is no
All anom	alies are discussed in the case narrativ	e.	
St. Calle Land Transact	경기 아이들이 얼마가 있다. 아이들이 아들은 사람들이 아이들이 아니는 사람들이 살아 있다면 살아 있다.		omponents reported are not listed of
۰	Description For report blank. The For report included The labor methods All anom The Labor For report included The labor methods are the Labor for report included The Labor for report in	me: Quarterly Well Sampling, Parke Name: Anita Patel Description For reporting purposes, the MQL is defined in the blank. The SDL is defined in the report as the MF or reporting purposes, the method blank repreincluded in the laboratory data package. The laboratory is NELAC-accredited under the methods associated with this laboratory data package. All anomalies are discussed in the case narrative. The Laboratory does not perform DCS analysis	me: Quarterly Well Sampling, Parker Laboratory Project Number:  Name: Anita Patel Prep Batch Number(s):  Description  For reporting purposes, the MQL is defined in the report as the RL. The unadjusted Mobank. The SDL is defined in the report as the MDL.  For reporting purposes, the method blank represents the unadjusted MQL. The DCS is

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



0013	FC	* * 1		1
GC/N	1	VA	211	AC
		VU	all	0.0

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method: SW846 8260B

# Method Blank Summary Job Number: TC14959

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l
108-88-3	Toluene	ND	1.0	0.26	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l

CAS No. Surrogate Recoveries	Limits
1868-53-7 Dibromofluoromethane 101%	6 79-122%
17060-07-0 1,2-Dichloroethane-D4 96%	75-121%
2037-26-5 Toluene-D8 102%	6 87-119%
460-00-4 4-Bromofluorobenzene 123%	6 80-133%

Page 1 of 1

Method: SW846 8260B

# Blank Spike Summary Job Number: TC14959

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-BS	K10024.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%
460-00-4	4-Bromofluorobenzene	123%	80-133%



<sup>\* =</sup> Outside of Control Limits.

Page 1 of 1

Method: SW846 8260B

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC14959

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

TC14959-1

		TC14974-3	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2



<sup>\* =</sup> Outside of Control Limits.



QC Dat	a Summaries	

includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

File ID SS003617 D	DF 1	Analyzed 08/27/12	By	Prep Date	Prep Batch	Analytical Batch GSS178
5500501712	•	00/27/12	2.	II u	III G	055176
		SS003617.D 1			900 3000, 00 00 00 00 00 00 00 00 00 00 00 00	

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Page 1 of 1

Method: RSKSOP-147/175

# Blank Spike Summary Job Number: TC14959

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

		0.11	DCD	DOD	
CAS No.	Compound	Spike	BSP	BSP	Limits
CAS No.	Compound	ug/l	ug/l	%	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

# 7.3.1 7

### **Matrix Spike Summary**

Job Number: TC14959

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

		TC14970-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/I	%	Limits
74-82-8	Methane	914 b	21.5	600	-337* a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

- (a) Outside control limits due to high level in sample relative to spike amount.
- (b) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.

Page 1 of 1

Method: RSKSOP-147/175

# **Duplicate Summary** Job Number: TC14959

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14959-1

		TC14970-1	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	914 a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



### ANALYSIS REPORT

Lab #: 261146 Job #: 19036

Sample Name/Number: WW15-HUR-081812

Company: Oil Tracers, LLC

Date Sampled: 8/18/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	δ <sup>13</sup> C ‰	δD ‰	δ <sup>18</sup> Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.40			
Oxygen	0.036			
Nitrogen	75.30			
Carbon Dioxide	0.28			
Methane	22.20	-45.91	-160.2	
Ethane	0.776	-29.9		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	0.0036			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	0.0004			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 239

Specific gravity, calculated: 0.883

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

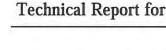
\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



Reissue #1 09/06/12



EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW25-MAT

Accutest Job Number: TC14955

Sampling Date: 08/17/12



EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 26



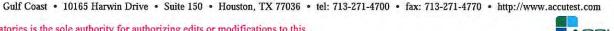
Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Richard Rollriguez Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.







Gulf Coast. Inc.

10165 Harwin Drive Houston, TX 77036 Tel: 713-271-4700

www.accutest.com

Thursday, September 06, 2012

EarthCon Consultants 4800 Sugar Grove, Suite 420 Stafford, TX 77477 ATTN: Gabriela Floreslovo

RE: Accutest job TC14955 Reissue

Dear Ms. Floreslovo:

The final report for job number TC14955 has been revised to identify the sampling event as 2nd Quarter.

Please feel free to contact me if I can be of further assistance.

Sincerely,

Elessa Sommers

Elessa Sommers Project Manager



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# Sample Summary

EarthCon Consultants

Job No:

TC14955

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW25-MAT

Sample	Collected			Matrix	Client
Number	Date	Time By	Received	Code Type	Sample ID
TC14955-1	08/17/12	15:10	08/21/12	AO Ground Water	WW25-MAT-081712





### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14955

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:43:59 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14955. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AO Batch ID: VK449

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS177

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC15158-1MS, TC15158-2DUP were used as the QC samples indicated.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



# Summary of Hits Job Number: TC14955

EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

08/17/12 Collected:



Page 1 of 1

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14955-1	WW25-MAT-0817	12				
Methane Ethane		0.507 0.0240	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Report of Analysis	

# 7

### Report of Analysis

Client Sample ID: WW25-MAT-081712

 Lab Sample ID:
 TC14955-1
 Date Sampled:
 08/17/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 K10043.D 1 08/23/12 **EM** n/a n/a VK449 Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	99%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	94%		75-121%		
2037-26-5	Toluene-D8	104%		87-119%		
460-00-4	4-Bromofluorobenzene	122%		80-133%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



### Report of Analysis

Client Sample ID: WW25-MAT-081712

 Lab Sample ID:
 TC14955-1
 Date Sampled:
 08/17/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003607.D	1	08/25/12	LT	n/a	n/a	GSS177
Run #2	SS003610.D	10	08/25/12	LT	n/a	n/a	GSS177

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.507 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0240	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2



N = Indicates presumptive evidence of a compound



B = Indicates analyte found in associated method blank



Misc. F	forms
Custody	Documents and Other Forms
Includes t	the following where applicable:
	f Custody
<ul> <li>LRC Fo</li> </ul>	rm



(FEFFE BANK)	
	Land Control
A	CCLITEST
Carlotte and	

### CHAIN OF CUSTODY

PAGE \_\_\_ OF \_\_\_

	ACCUTEST.			10165 Har	win Dr. St	te 150 Ho	uston, TX	7703	36			FED-E	X Tracking	•			Bottle C	inder Control	8		
					3-271-470		713-271-					Accute	st Quote #				Accutes	1 Job =	57	140	9 < <
1200	Client / Reporting Information			Project				(B)	污渍	19.E.		7		R	eque	sted	Ana	lyses	1	4	Matrix Codes
Compa	ny Name	Project Name:																			
Earth(	Con Consultants, Inc.	Second Quar	terly Well Samp	oling, Parke	County, Texas							BILE					111	- 1		DW - Drinking Water	
Street A		Street		(2) 日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日							<u> </u>	Aeth								GW - Ground Water- WW - Water	
4800 S	Sugar Grove Blvd., Suite 390 State Zip	City State				nformatic y Name	n ( If diffe	rzat	from Rep	ort to)		4	96,		1						SW - Surface Water
Staffo				-	1	, ,						1	re r		1						SO - Soil SL- Studge
Project		Project#		_	Street Ac	dress	-					1	sop						Н		SED-Sediment OI - Oil
	ela Floreslovo											1	ne,								LIQ - Other Liquid AIR - Air
Phone		Client Purchase	Order#		City				State		Zip	1	175				1			13	SOL - Other Solid WP - Wipe
Sample	11-3513 r(s) Name(s) Phone #	Project Manager			Attention							1	Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175							- 1	FB-Field Blank
JUL	r(s) Name(9) Phone # -1E HELFKICH (281)240-5200	1					34					8	by F								
			Collec	dian			11:	Nur	mber of pres	erved Bottle	- W	BTEX 8260B	ane						- 1		1
Acordinal Sample #	Field ID / Point of Collection		1			# of bottles	5 E	9 9	2804 RE 2804	E CO	NaH80 ENCOR	1	uta rop			4			- 1		LAB USE ONLY
1	Value of the second sec	Date.	Time	Sampled By	Matrix		2 2	9 =	2 2	9 2 7	2 0 0		1/2		+	+	-		-	-	LAB USE ONLY
1	WW25-MAT-081712	08/17/12	150	JLH	W	0	$\lambda$	+	111		-		^		+	+	-		-	47	r)·
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-	Tumaround Time ( Business days)  X Standard	Approved By (Acco		STATE OF STA	_	-	Data dal "A" (	_	liverable I	nformation X TF		B.C.	2000年	のまりと		C	mments	/ Special I	Instruct	ions 🔛	能的同类是更多的
	5 Day RUSH	Approved by (Acci	must PM); / Date:				cial "B" (		100		DD Form	at									
	4 Day RUSh				_		Level 3+4			$\Box$ •											
1134	1 Day RUSH 2 Day RUSH		_			Commer	Level 3+	4}	104					A.			_		_		
	1 Day EMERGENCY					Commer		merc	ial "A" = R	esutts Only			,								
	Emergency & Rush T/A data available VIA Lablink						Com	merc	101 75" - R	esults + Q	Summa										-20
5-1427		Sa	mple Custody m	ust be docur	nented b	elow eac			les chan					delivery.			10074	A 2 10 (	A PORT		和自然的 (1882年) (1982年)
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Rell 5	nquismed by:	. 1	Received By:	-		V	, ,	C	ustody Sea	#		Intact	2	Preserved	where ap	plicable			On ice	6	polar Temp.
-			1-			-		1				Not int	act		_				ш		

TC14955: Chain of Custody Page 1 of 3





### **Accutest Laboratories Sample Receipt Summary**

Page 1 of 2

Date / Time Received: 8/21/20	112		Delivery I	Viethod	:	FedEx	Airbill #'s: 795765167616				
No. Coolers: 1	Therm ID	: IRGUN5;					Temp Adjustment Factor:	-0.4;			
Cooler Temps (Initial/Adjusted)	): #1: (2.	.8/2.4);									
Cooler Security Y o	or N			Υ (	or N	Sample Integ	grity - Documentation	Y	or	N	
1, Custody Seals Present:		3. COC Pro	77717	$\checkmark$		1. Sample lab	els present on bottles:				
2. Custody Seals Intact:		4. Smpl Dates	s/Time OK	$\checkmark$		2. Container la	abeling complete:	V			
Cooler Temperature	Y or	N				3. Sample cor	tainer label / COC agree:	$\checkmark$			
1. Temp criteria achieved:	V					Sample Inte	grity - Condition	Y	or	N	
Cooler temp verification:						1. Sample rec		V			
3. Cooler media:	Ice (B	ag)				14 May 114 May 12 May 1	rs accounted for:	<b>V</b>			
Quality Control Preservation	Y or	N N/A		WTB	STB	3. Condition o	f sample:		Intac		
1. Trip Blank present / cooler:	$\mathbf{Z}$			$\checkmark$		Sample Inte	grity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						1. Analysis re	quested is clear:	V			
3. Samples preserved properly:	$\checkmark$					2. Bottles rec	eived for unspecified tests			<b>V</b>	
4. VOCs headspace free:						3. Sufficient v	olume recvd for analysis:	V			
						4. Compositir	g instructions clear:				V
						5. Filtering in:	structions clear:				V
Comments											

TC14955: Chain of Custody Page 2 of 3







#### Sample Receipt Log

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14955: Chain of Custody

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#### 12

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### Appendix A Laboratory Data Package Cover Page

TC14955 This data package consists of

	This sig	gnature page, the laboratory revi	ew checklist, and the following reportable data:
ū	R1	Field chain-of-custody docu	mentation;
D	R2	Sample identification cross-	reference;
Ū	R3	Test reports (analytical data	sheets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
Ţ	R4	Surrogate recovery data incl	luding:
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
1	R5	Test reports/summary forms	for blank samples;
ÇI:	R6	Test reports/summary forms	for laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
Ç	R7	Test reports for project matri	x spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
D.	R8	Laboratory analytical duplica	ate (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
	R9	List of method quantitation li	mits (MQLs) and detectability check sample results for each analyte for each
	R10	Other problems or anomalie	

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicab	le: This laboratory meets a	n exception under 30 TAC&25.6 and was last in	spection by
[1]	[X ] TCEQ or [ ] noted in the Exception I		a in this laboratory data package are ge of the report in which these data are
QA Manager			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	_ Hand	2 Laboratory Director	8/29/2012



Laboraton		Accutest Gulf Coast	CHECKLIST: REPORTABLE TLRC Date:	8/29/2012					
Laboratory Project Na		Quarterly Well Sampling, Parker County, Texas		TC14955					
Reviewer		Anita Patel	_			40			
#1	A <sup>2</sup>	DESCRIPTION	Prep Batch Number(s):	G55	1//,	VK4	19 ND4	ED.	
R1	OI	CHAIN-OF-CUSTODY (C-O-C):		TES	NO	INA	NR⁴	EK #	
K1	OI.		tandard conditions of sample acceptability	3000			-		
			landard conditions of sample acceptability	X					
		upon receipt?	anditions described in an evention reveal	· ·					
	01		onditions described in an exception report?	X		_			
R2	OI	Sample and quality control (QC) id			-	-			
			s-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-	referenced to the corresponding QC data?	X			12.1		
R3	01	Test reports				100			
		Were samples prepared and analyze		X					
		Other than those results <mql, td="" were<=""><td>all other raw values bracketed by calibration</td><td>v</td><td></td><td></td><td></td><td></td></mql,>	all other raw values bracketed by calibration	v					
		standards?		X				, 5	
		Were calculations checked by a pee	r or supervisor?	X		-	+== 17	100	
		Were all analyte identifications chec	ked by a peer or supervisor?	X		- 6	1	-	
		Were sample detection limits reporte		X			lu l		
			t samples reported on a dry weight basis?			Х			
		Were % moisture (or solids) reported	for all soil and sediment samples?			X			
			platile analysis extracted with methanol per						
		SW846 Method 5035?			X				
		If required for the project, are TIC's re	eported?			X	1 10 11		
R4	0	Surrogate recovery data		100					
		Were surrogates added prior to extra	action?	Х					
		Were surrogate percent recoveries in	all samples within the laboratory QC limits?	X					
R5	OI	Test reports/summary forms for b		The same		-	-		
		Were appropriate type(s) of blanks a		Х		-			
		Were blanks analyzed at the approp		X					
			he entire analytical process, including						
		preparation and, if applicable, cleanu		Х					
		Were blank concentrations <mql?< td=""><td>p brocedics:</td><td>Х</td><td></td><td></td><td></td><td></td></mql?<>	p brocedics:	Х					
R6	OI	Laboratory control samples (LCS)		^	_	-	_		
No		Were all COCs included in the LCS		Х		_		-	
			tire analytical procedure, including prep and						
		cleanup steps?	the distribution proceeding, including prep and	Х					
		Were LCSs analyzed at required free	TUPOCO?	Х				-	
			%Rs within the laboratory QC limits?	x				_	
			data document the laboratory's capability to				1000		
		detect the COCs at the MDL used to		X				2	
		Was the LCSD RPD within QC limits			-	Х			
R7	OI	Matrix spike (MS) and matrix spike			_	^			
N/	- 01		nalytes included in the MS and MSD?	X			- 1		
	1 - 4	Were MS/MSD analyzed at the appro		X					
		Were MS (and MSD, if applicable) %		X					
		Were the MS/MSD RPDs within labor		X				-	
R8	OI	Analytical duplicate data	natory do mino:	^					
	- Oi		on analyzed for each matrix 2	100	-	-	-		
		Were appropriate analytical duplicate		X					
		Were RRDs or relative standard days		X					
R9	OI		ations within the laboratory QC limits?	Х		ES			
N3	UI UI	Method quantitation limits (MQLs)		34	_		-		
			te included in the laboratory data package?	X					
			pentration of the lowest non-zero calibration	Х				-	
D40	01		luded in the laboratory data package?		Χ		1.0	3	
R10	OI	Other problems/anomalies	and an agree to the Control of the C			-	-	-	
			oecial conditions noted in this LRC and ER?	Х		14			
			logy used to lower the SDL to minimize the	Х					
			under the Texas Laboratory Accreditation	0.1					
		[[[[[[[] [[] [[] [[] [[] [[] [[] [[] [[	nd methods associated with this laboratory	X				4	
_ 7.4		data package?							



aboratory		Accutest Gulf Coast LRC Date:				8/29/2012				
Project Na		Quarterly Well Sampling, Parker Laboratory Project Number:				TC14955				
Reviewer						GSS177, VK449 YES NO NA3 NR4 ER				
#1	A <sup>2</sup>	DESCRIPTION		YES N	O NA	NR⁴ E	R			
S1	OI	Initial calibration (ICAL)		1	-	7230				
		Were response factors and/or relative limits?	x	1	711					
V V V		Were percent RSDs or correlation co	officiant actionic worth	x	+=		_			
					+		_			
			mended in the method used for all analytes?	X	+		_			
		Were all points generated between the calculate the curve?	Х							
		Are ICAL data available for all instrum	nents used?	X						
	100	Has the initial calibration curve been standard?	х							
S2	OI	Initial and continuing calibration v	1000	-		18				
		Was the CCV analyzed at the metho		X			_			
			alyte within the method-required QC limits?	X			_			
		Was the ICAL curve verified for each	X			_				
			e concentration in the inorganic CCB <mdl?< td=""><td>~</td><td>X</td><td></td><td>-</td></mdl?<>	~	X		-			
S3	0	Mass spectral tuning			1.4					
		Was the appropriate compound for the	ne method used for tuning?	Х	1	r r				
		Were ion abundance data within the		x	+	-	-			
S4	0	Internal standards (IS)	moundaried and militar	^	4					
34	-		nes within the method-required QC limits?	х	_		-			
S5	OI	Raw data (NELAC Section 5.5.10)	nes within the method-required QC limits?	^			_			
55	UI.			7	1	-				
		The state of the s	matograms, spectral data) reviewed by an	X						
		analyst?			-		_			
S6 0		Were data associated with manual in	tegrations liagged on the raw data?	X			_			
50	0	Dual column confirmation	and the south of southed 000	-	TV					
07	-	Did dual column confirmation results meet the method-required QC?  O Tentatively identified compounds (TICs):			X	100	_			
S7	0			-	-	-	-			
			ss spectra and TIC data subject to appropriate		X	1 - 1				
S8 I		checks? Interference Check Sample (ICS) r				_				
20				-	TV					
	-	Were percent recoveries within method QC limits?			X		_			
S9	I Serial dilutions, post digestion spikes, and method of standard additions  Were percent differences, recoveries, and the linearity within the QC limits			_						
			, and the linearity within the QC limits		X					
S10	OI	specified in the method?  Method detection limit (MDL) studi			160		-			
510	UI			- V	-		_			
		Was a MDL study performed for each		X		-	_			
044	- 01	Is the MDL either adjusted or support	ted by the analysis of DCSs?	X	_		1			
S11	OI	Proficiency test reports			-					
			ceptable on the applicable proficiency tests or	x						
040	01	evaluation studies?		37			-			
S12	OI	Standards documentation								
		Are all standards used in the analyses NIST-traceable or obtained from other								
040		appropriate source?					_			
S13	OI	Compound/analyte identification p		V 1	-	-				
	-	Are the procedures for compound/an		X			_			
S14	OI	Demonstration of analyst compete		-	7	-				
		Was DOC conducted consistent with		X	-		_			
		Is documentation of the analyst's con		X			_			
S15	OI		ion for methods (NELAC Chapter 5)	1	-					
			the data documentated, verified, and	x						
		validated, where applicable?		133						
S16	OI	Laboratory standard operating pro			-					
		Are laboratory SOPs current and on t	file for each method performed?	X						



Name:	Accutest Gulf Coast	LRC Date:	8/29/2012			
me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC14955			
Name:	Anita Patel	Prep Batch Number(s):	GSS177, VK449			
Descript	tion					
	사람들 구시 시간에 다른 아이들이 아이들이 가는 사람들이 가지 않는데 하지만 하는데 되었다.	그 아니다 이 아이는 그는 아니라 이번 이번 이 아이를 보고 있다면 하는데 그 아이를 보고 있다.	QL/RL is reported in the method			
The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.						
		ents the unadjusted MQL. The DCS is	s on file in the laboratory and is not			
۰	For report blank. The Labor do not hat For report included.	me: Quarterly Well Sampling, Parker Name: Anita Patel  Description  For reporting purposes, the MQL is defined in th blank. The SDL is defined in the report as the MI  The Laboratory does not perform DCS analysis do not have values in the Texas TRRP PCL table For reporting purposes, the method blank represincluded in the laboratory data package.  The laboratory is NELAC-accredited under the T	me: Quarterly Well Sampling, Parker Name: Anita Patel Prep Batch Number(s):  Description  For reporting purposes, the MQL is defined in the report as the RL. The unadjusted Miblank. The SDL is defined in the report as the MDL.  The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The code not have values in the Texas TRRP PCL tables.  For reporting purposes, the method blank represents the unadjusted MQL. The DCS is			

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



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GC	1	0	1/4	20	111	AC
111/	1 1	1.7	V (	JIA		20

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



#### Method Blank Summary

Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14955-1

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	ND	1.0	0.25	ug/l		
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l		
108-88-3	Toluene	ND	1.0	0.26	ug/l		
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l		
CAS No.	Surrogate Recoveries		Limi	ts			
1868-53-7	Dibromofluoromethane	101%	79-12	22%			
17060-07-0	1,2-Dichloroethane-D4	96%	75-12	1%			
2037-26-5	Toluene-D8	102%	87-11	9%			
460-00-4	4-Bromofluorobenzene	123%	80-13	3%			

Page 1 of 1

Page 1 of 1

Method: SW846 8260B

# Blank Spike Summary Job Number: TC14955

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Analyzed	By	Prep Date	Prep Batch	Analytical Batch
08/23/12	EM	n/a	n/a	VK449
	08/23/12	08/23/12 EM	08/23/12 EM n/a	08/23/12 EM n/a n/a

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%



<sup>\* =</sup> Outside of Control Limits.

Page 1 of 1

Method: SW846 8260B

#### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

TC14955-1

		TC14974-3	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2



<sup>\* =</sup> Outside of Control Limits.



GC Volatiles	
QC Data Summaries	

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS177-MB	SS003589.D	1	08/25/12	LT	n/a	n/a	GSS177

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	110/1



Method: RSKSOP-147/175

# Blank Spike Summary Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	<b>DF</b>	<b>Analyzed</b> 08/25/12	By	<b>Prep Date</b>	Prep Batch	Analytical Batch
GSS177-BS	SS003587.D	1		LT	n/a	n/a	GSS177

The QC reported here applies to the following samples:

Compound	Spike ug/l	BSP ug/l	BSP %	Limits	
Methane	21.5	23.5	109	70-130	
Ethene	57.4	56.9	99	70-130	
Ethane	43.3	40.8	94	70-130	
Propane	60.6	56.5	93	70-130	
Isobutane	72.5	66.3	92	70-130	
Butane	76.6	65.5	86	70-130	
	Methane Ethene Ethane Propane Isobutane	Compound         ug/l           Methane         21.5           Ethene         57.4           Ethane         43.3           Propane         60.6           Isobutane         72.5	Compound         ug/l         ug/l           Methane         21.5         23.5           Ethene         57.4         56.9           Ethane         43.3         40.8           Propane         60.6         56.5           Isobutane         72.5         66.3	Compound         ug/l         ug/l         %           Methane         21.5         23.5         109           Ethene         57.4         56.9         99           Ethane         43.3         40.8         94           Propane         60.6         56.5         93           Isobutane         72.5         66.3         92	Compound         ug/l         ug/l         %         Limits           Methane         21.5         23.5         109         70-130           Ethene         57.4         56.9         99         70-130           Ethane         43.3         40.8         94         70-130           Propane         60.6         56.5         93         70-130           Isobutane         72.5         66.3         92         70-130

<sup>\* =</sup> Outside of Control Limits.

Page 1 of 1

Method: RSKSOP-147/175

# Matrix Spike Summary Job Number: TC14955

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15158-1MS	SS003591.D	1	08/25/12	LT	n/a	n/a	GSS177
TC15158-1	SS003590.D	1	08/25/12	LT	n/a	n/a	GSS177

The QC reported here applies to the following samples:

		TC15158-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/I	%	Limits
74-82-8	Methane	ND	21.5	17.0	79	60-140
74-85-1	Ethene	ND	57.4	43.9	76	60-140
74-84-0	Ethane	ND	43.3	31.2	72	60-140
74-98-6	Propane	ND	60.6	44.4	73	60-140
75-28-5	Isobutane	ND	72.5	48.5	67	60-140
106-97-8	Butane	ND	76.6	48.7	64	60-140



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

# **Duplicate Summary Job Number:** TC14955

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15158-2DUP	SS003593.D	1	08/25/12	LT	n/a	n/a	GSS177
TC15158-2	SS003592.D	1	08/25/12	LT	n/a	n/a	GSS177

The QC reported here applies to the following samples:

		TC15158-2	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	ND	ND		nc	30
74-85-1	Ethene	ND	ND		nc	30
74-84-0	Ethane	ND	ND		nc	30
74-98-6	Propane	ND	ND		nc	30
75-28-5	Isobutane	ND	ND		nc	30
106-97-8	Butane	ND	ND		nc	30



<sup>\* =</sup> Outside of Control Limits.



#### ANALYSIS REPORT

Lab #: 261139 Job #: 19036

Sample Name/Number: WW25-MAT-081712 Company: Oil Tracers, LLC

Date Sampled: 8/17/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical	$\delta^{13}C$	δD	$\delta^{18}O$
	mol. %	%	%。	%。
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.38			
Oxygen	0.43			
Nitrogen	82.39			
Carbon Dioxide	0.19			
Methane	15.26	-44.70	-135.7	
Ethane	0.306	-27.0		
Ethylene	nd			
Propane	0.0276			
Propylene	nd			
Iso-butane	0.0047			
N-butane	0.0062			
Iso-pentane	0.0008			
N-pentane	nd			
Hexanes +	0.0012			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 161

Specific gravity, calculated: 0.912

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12



#### Technical Report for

#### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW07-MER

Accutest Job Number: TC14967

Sampling Date: 08/18/12

#### Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



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#### Sample Summary

EarthCon Consultants

Job No:

TC14967

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW07-MER

Sample	Collected	Collected		Matri	x	Client	
Number	Date	Time By	Received	Code	Туре	Sample ID	
TC14967-1	08/18/12	09:35	08/21/12	AQ	Ground Water	WW07-MER-081812	

3 of 25



#### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14967

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:52:44 PM

1 Sample was collected on 08/18/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14967. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ

Batch ID: VK449

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ

Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



# Summary of Hits Job Number: TC14967

Account:

EarthCon Consultants Quarterly Well Sampling, Parker County, Texas 08/18/12 Project:

Collected:

Page 1 of 1

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method	
TC14967-1	WW07-MER-0818	312					
Methane		0.596	0.0050	0.0030	mg/l	RSKSOP-147/175	
Ethane		0.0311	0.0010	0.00050	mg/l	RSKSOP-147/175	





Report of Analys	sis	



# 4

#### Report of Analysis

Client Sample ID: WW07-MER-081812

 Lab Sample ID:
 TC14967-1
 Date Sampled:
 08/18/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K10049.D	1	08/23/12	EM	n/a	n/a	VK449
Run #2							

	Purge Volume	
Run #1	5.0 ml	
Run #2		

#### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/1	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	98%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	94%		75-121%		
2037-26-5	Toluene-D8	102%		87-119%		
460-00-4	4-Bromofluorobenzene	123%		80-133%		

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound



 Lab Sample ID:
 TC14967-1
 Date Sampled:
 08/18/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

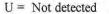
Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003636.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003637.D	10	08/27/12	LT	n/a	n/a	GSS178

#### **RSK147 Special List**

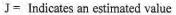
CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.596 a	0.0050	0.0030	mg/I	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0311	0.0010	0.00050	mg/1	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2



SDL - Sample Detection Limit

MQL = Method Quantitation Limit



B = Indicates analyte found in associated method blank







E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound



Misc. F	orms
Custody	Documents and Other Forms

Chain of CustodyLRC Form



EACCULES!			10165 Ha	rwin Dr. S	te 150 Ho	ouston, T	CX 770	036				FED	EX Trackin	g s			_	Bottle C	Order Con	troi d		
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Stafford TX 77477 Project Contact E-mail	Project #		_	Street A	ddmas	_		_	_			-	ppo									SL-Sludge SED-Sediment
Gabriela Floreslovo	75.05.0			-0.550									1,18				1				L M	01-01
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3 Day RUSH					REDTH (				L	_ 0	ner	_										
2 Day RUSN					Commerc													_		_	_	
1 Day EMERGENCY						Cor	merc	igi "A" =	Resul	is Only			- 4									
Emergency & Rush T/A data available VIA Lablink						Cor	nmerc	= "8" lab	Resul	ts + QC	Summa	Ŋ										
2000年1月1日日本中国共和国共和国	Si	ample Custody mu	est be docum	ented be	low each	h time :	samo	les cha	nae o	S + QC	& Surro	gale Sur cluding	courier	dallus	-	_	_	BURNE	HELE TO ME	eles exect	zadar (harir-	The state of the Control of the Cont
Refriquished by Sympton: Data Times	1-10-1	Received By:	711		100 71.3	N.	R	alinquish	109:	11	Jion, III	CHOCKE	Couries	Gelive	Date Tin	vet	-	Receive		6×108	n was a series	
- Marine 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			11			- 1	2		1	1					8.	15:16	115	2				
SU TOUR TOUR	14/815	Received By:				/	R	lingulatu	d By:						Date Tin	18:		Received	d By:		*:	
Refinquished b): Date Tage. 2	1	Received By:			X		C.	ustody Se	ni 6		-			Presurv	od where	applical	ole .	4	_	Onlice		oler Temp.
		15	_		U	_	L	1				Not in	act									

TC14967: Chain of Custody Page 1 of 3







#### Accutest Laboratories Sample Receipt Summary

CCUTEST Page 1 of 2 Project: 2ND QUARTERLY Client: EARTHCON CONSULTANTS Accutest Job Number: TC14967 Airbill #'s: 801561645028 Date / Time Received: 8/21/2012 **Delivery Method:** FedEx No. Coolers: 1 Therm ID: IRGUN5; Temp Adjustment Factor: -0.4; Cooler Temps (Initial/Adjusted): #1: (2.3/1.9); Cooler Security Y or N Y or N Sample Integrity - Documentation N or 3. COC Present: 1. Custody Seals Present: V 1. Sample labels present on bottles: 4. Smpl Dates/Time OK V V 2. Custody Seals Intact: V 2. Container labeling complete: 3. Sample container label / COC agree: V Cooler Temperature Y or N 1. Temp criteria achieved: V Y N Sample Integrity - Condition 2. Cooler temp verification: V 1. Sample recvd within HT: 3. Cooler media: Ice (Bag) 2. All containers accounted for: V WTB STB 3. Condition of sample: Intact Quality Control Preservation Y or N N/A V 1. Trip Blank present / cooler: Sample Integrity - Instructions Υ or N N/A V 2. Trip Blank listed on COC: 1. Analysis requested is clear: V 3. Samples preserved properly: 2. Bottles received for unspecified tests V V 4. VOCs headspace free: 3. Sufficient volume recvd for analysis: ~ 4. Compositing instructions clear: V 5. Filtering instructions clear: V Comments

TC14967: Chain of Custody

Page 2 of 3





#### Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
3	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14967: Chain of Custody

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5

# Appendix A Laboratory Data Package Cover Page TC14967 This data package consists of

D	This sign	nature page, the laboratory review	w checklist, and the following reportable da	ta:
Į.	R1	Field chain-of-custody docum	nentation;	
Q.	R2	Sample identification cross-re	eference;	
į	R3		heets) for each environmental sample that	includes:
		a)	Items consistent with NELAC 5.13	
		b)	dilution factors,	E. G. E. G. E. S.
		c)	preparation methods,	
		d)	cleanup methods, and	
		e)	if required for the project, tentative	ly identified compounds (TICs)
Į.	R4	Surrogate recovery data inclu		ly identified compounds (110s).
de!	114	a)		
			Calculated recovery (%R), and	0
100	DE	b)	The laboratory's surrogate QC lim	its.
N.	R5	Test reports/summary forms f		luni.
P	R6		for laboratory control samples (LCSs) inclu-	ding:
		a)	LCS spiking amounts,	
		b)	Calculated %R for each analyte, a	nd
		c)	The laboratory's LCS QC limits.	
Q	R7	Test reports for project matrix	spike/matrix spike duplicates (MS/MSDs)	including:
		a)	Samples associated with the MS/M	MSD clearly identified,
		b)	MS/MSD spiking amounts,	
		c)	Concentration of each MS/MSD ar	nalyte measured in the parent and
		d)	Calculated %Rs and relative percent	
		e)	The laboratory's MS/MSD QC limi	And the state of t
D	R8	the state of the s	e (if applicable) recovery and precision:	
~	110	a)	The amount of analyte measured i	n the duplicate
		b)		if the duplicate,
		c)	The calculated RPD, and	died divelled
-	R9		The laboratory's QC limits for anal	
D			nits (MQLs) and detectability check sample	results for each analyte for each
E	R10	Other problems or anomalies.		
			d (NR)" item in Laboratory Review Checklis	
method	tor which the	e laboratory does not notd NELA	C accreditation under the Texas Laboratory	Accreditation Program.
Release	Statement	: I am responsible for the releas	e of this laboratory data package. This lab	oratory is NELAC accredited under the
			ethods, analytes, and matrices reported in	
			eviewed by the laboratory and is complete a	
			ed by the laboratory in the attached except	
			malies, observed by the laboratory as havir	
			Laboratory Review Checklist, and no info	
withheld		identified by the laboratory in the	s Laboratory Review Checklist, and no into	mation of data have been knowingly
withheld	1.			
Chack	if applicable	a: This laboratory mosts an aver	eption under 30 TAC&25.6 and was last ins	postion by
[]	ii applicabl		집에 된다. 이렇게 얼마면 아이들이 없는 사이 모든 하다.	
1.1			April 2011. Any findings affecting the data	
		noted in the Exception Report	ts herein. The official signing the cover pag	e of the report in which these data are
			ing this data package and is by signature a	
		is true.		
QA Man	ager			
Name (F		Signature	Official Title (printed)	Date
2.525 Lt V.			Control of the Assessed	7,000
Richard	Rodriguez	100	Laboratory Director	8/29/2012
		-		OLDOLD IL



aborator		Accutest Gulf Coast	HECKLIST: REPORTABLE  LRC Date:		29/20	112		_			
aborator	y Ivanie.	Quarterly Well Sampling, Parker	LING Date.	0/2	23120	112		_			
roject Na	me.	County, Texas	Laboratory Project Number:	TO	TC14967						
	Name:	Anita Patel	Prep Batch Number(s):	_	GSS178, VK449						
#1	A <sup>2</sup>	DESCRIPTION	Prep batch Number(s).			NA <sup>3</sup>		TED			
R1	OI	CHAIN-OF-CUSTODY (C-O-C):		153	INC	LINA	INIX	LEN			
N	01		andard conditions of sample acceptability								
		upon receipt?	ardard conditions of sample acceptability	X	1		6				
			inditions described in an exception report?	X	-		-	-			
R2	OI		_ A								
KZ.	OI .	Sample and quality control (QC) id		V	1		-				
			referenced to the laboratory ID numbers?	X				_			
-			eferenced to the corresponding QC data?	X				_			
R3	Ol	Test reports	L. W. C. L. C.				-				
		Were samples prepared and analyze		X							
			all other raw values bracketed by calibration	X							
		standards?	V-10-2-20-2-A		-			_			
	Were calculations checked by a peer		X				-				
		Were all analyte identifications check		X			_	-			
		Were sample detection limits reported		X	-			-			
			samples reported on a dry weight basis?	-	-	X					
		Were % moisture (or solids) reported	for all soil and sediment samples?  latile analysis extracted with methanol per	-	-	Х		-			
		SW846 Method 5035?	name arranysis extracted with methanor per			X	1				
		If required for the project, are TIC's re	norted?			X		$\vdash$			
R4	0	Surrogate recovery data		-	^	-	-				
R4 0		Were surrogates added prior to extra	Х	1							
R5 OI			all samples within the laboratory QC limits?	x			-	$\vdash$			
	01	Test reports/summary forms for bi		^	-		_				
	- 01	Were appropriate type(s) of blanks ar		X	F						
		Were blanks analyzed at the appropr		X				-			
		Were method blanks taken through the					-				
		preparation and, if applicable, cleanu	X								
		Were blank concentrations <mql?< td=""><td>X</td><td></td><td></td><td></td><td></td></mql?<>	X								
R6	01	Laboratory control samples (LCS):	-								
		Were all COCs included in the LCS?	X								
		Was each LCS taken through the ent		77.1							
		cleanup steps?		X		-	11				
		Were LCSs analyzed at required freq	uency?	X	9.77						
		Were LCS (and LCSD, if applicable)		X	511						
			data document the laboratory's capability to	77	777						
		detect the COCs at the MDL used to		X		1.	1	3			
		Was the LCSD RPD within QC limits	?		111	X					
R7	OI	Matrix spike (MS) and matrix spike	duplicate (MSD) data								
		Were the project/method specified an	alytes included in the MS and MSD?	X							
		Were MS/MSD analyzed at the appro	priate frequency?	X							
		Were MS (and MSD, if applicable) %	Rs within the laboratory QC Limits?		X						
		Were the MS/MSD RPDs within labor	ratory QC limits?	X							
R8	OI	Analytical duplicate data				73					
		Were appropriate analytical duplicate	s analyzed for each matrix?	Х							
		Were analytical duplicates analyzed a	at the appropriate frequency?	X							
			ations within the laboratory QC limits?	X	2.13		4.3				
R9	01	Method quantitation limits (MQLs):		100		-					
			e included in the laboratory data package?	Х							
		Do the MQLs correspond to the conce	entration of the lowest non-zero calibration	Х	ijť	12					
			uded in the laboratory data package?		Х			114			
R10	OI	Other problems/anomalies	1		2.5						
		Are all known problems/anomalies/sp	X								
		Was applicable and available technol	ogy used to lower the SDL to minimize the	Х		1					
		Is the laboratory NELAC-accredited u	nder the Texas Laboratory Accreditation			17		F			
	-	Program for the analytes, matrices, and data package?	nd methods associated with this laboratory	X				3			

Laboratory		Accutest Gulf Coast	LRC Date:	8/29/2012						
Project Na		Quarterly Well Sampling, Parker	Laboratory Project Number:	TC1	496	7				
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS1						
#1	A <sup>2</sup>	DESCRIPTION		YES	NO	NA3	NR <sup>4</sup>	ER#		
S1	Ol	Initial calibration (ICAL)				-		-		
		Were response factors and/or relativ limits?	e response factors for each analyte within QC	х						
		Were percent RSDs or correlation co	pefficient criteria met?	X	10	'				
		Was the number of standards recom	mended in the method used for all analytes?	X		-				
		Were all points generated between to calculate the curve?	х							
			Are ICAL data available for all instruments used?							
			verified using an appropriate second source	х						
S2	OI	CONTRACTOR OF THE CONTRACTOR O	standard? Initial and continuing calibration verification (ICCV AND CCV) and continuing							
OZ.	0.	Was the CCV analyzed at the metho		ΧI	1					
		Were percent differences for each ar	X							
		Was the ICAL curve verified for each	x	-						
	0.0	Was the absolute value of the analyt	^	-	Х					
S3	0	Mass spectral tuning	e concentration in the morganic CCB-MDL?		_	^				
33	- 0	Was the appropriate compound for the	ho mathed used for tuning?	Х	7					
		Were ion abundance data within the		x	$\rightarrow$	-	-			
\$4	0	Internal standards (IS)	method-required QC limits?		_			_		
34	- 0		mes within the method-required QC limits?	VI	-	-	-			
S5	OI	Raw data (NELAC Section 5.5.10)	mes within the method-required QC limits?	X	_					
33	U						-			
	analyst?	omatograms, spectral data) reviewed by an	X							
			X	-						
S6	Were data associated with manual integrations flagged on the raw data?  O Dual column confirmation		llegrations hagged on the law data?	^	_	_				
30	Did dual column confirmation results meet the r		most the method required OC2		7	Х		_		
S7	0	Tentatively identified compounds		_	^	-	-			
3/			ss spectra and TIC data subject to appropriate		П	х				
S8	1	Interference Check Sample (ICS)								
00	-	Were percent recoveries within meth		-	Х					
S9	-1-	Serial dilutions, post digestion sp		-	^		-			
- 00			s, and the linearity within the QC limits			х	T			
S10	OI	Method detection limit (MDL) stud	ies			-				
0.10		Was a MDL study performed for eac		X	$\neg$			_		
		Is the MDL either adjusted or suppor		X	-		-	5		
S11	OI	Proficiency test reports	to by the didiyolo of Book.	A .			-	_		
011	- 0,		cceptable on the applicable proficiency tests or	х	П					
S12	OI	Standards documentation		1000		-		-		
			es NIST-traceable or obtained from other	1.450	T					
		appropriate source?	11121 2231301 1 3710012 0 111111	X						
S13	OI	Compound/analyte identification p	procedures					100		
- 11		Are the procedures for compound/an		Х	T					
S14	OI	Demonstration of analyst compete								
		Was DOC conducted consistent with	Х							
		Is documentation of the analyst's cor	X			9-7				
S15	OI	Verification/validation documenta			7 9		- 61			
		Are all the methods used to generate	95	T						
		validated, where applicable?	TO A LANGUAGE SERVICE	X						
S16	OI	Laboratory standard operating pro	ocedures (SOPs)	1000						
		Are laboratory SOPs current and on		X	T		1	-		



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	8/29/2012
Project Na	me:	Quarterly Well Sampling	, Parker Laboratory Project Number:	TC14967
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS178, VK449
ER#	Descript	tion		
1	blank. Th	ne SDL is defined in the report		
2		ting purposes, the method bla in the laboratory data package	nk represents the unadjusted MQL. The DC	S is on file in the laboratory and is not
3			der the Texas Laboratory Accreditation Prog data package for analytes that are listed in	
4	All anoma	alies are discussed in the case	narrative.	
5		oratory does not perform DCS ave values in the Texas TRRP	analysis for Method RSKSOP-147/175. The PCL tables.	e components reported are not listed o

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS Volatiles	
QC Data Summaries	

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Page 1 of 1

Method: SW846 8260B

# Method Blank Summary Job Number: TC14967

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

TC14967-1

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l
108-88-3	Toluene	ND	1.0	0.26	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	75-121%
2037-26-5	Toluene-D8	102%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%

Page 1 of 1

Method: SW846 8260B

# Blank Spike Summary Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-BS	K10024.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

TC14967-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%



<sup>\* =</sup> Outside of Control Limits.

## 6.3

Page 1 of 1

Method: SW846 8260B

### ത

#### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

TC14967-1

		TC14974-3	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2



<sup>\* =</sup> Outside of Control Limits.



GC Volatiles		33
QC Data Summaries	S	

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: RSKSOP-147/175

Account:

PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14967-1

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/1
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	110/1



Page 1 of 1

Method: RSKSOP-147/175

#### Blank Spike Summary

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14967-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130



<sup>\* =</sup> Outside of Control Limits.

# 3.1 7

Page 1 of 1

Method: RSKSOP-147/175

#### **Matrix Spike Summary**

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14967-1

		TC14970-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits
74-82-8	Methane	914 b	21.5	600	-337* a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

<sup>(</sup>a) Outside control limits due to high level in sample relative to spike amount.



<sup>(</sup>b) Result is from Run #2.

<sup>\* =</sup> Outside of Control Limits.

Page 1 of 1

Method: RSKSOP-147/175

## **Duplicate Summary** Job Number: TC14967

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14967-1

		TC14970-1	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	914 a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



#### ANALYSIS REPORT

Lab #: 261142 Job #: 19036

Sample Name/Number: WW07-MER-081812

Company: Oil Tracers, LLC

Date Sampled: 8/18/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	δ <sup>13</sup> C ‰	δD ‰	δ <sup>18</sup> Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.32			
Oxygen	0.045			
Nitrogen	80.87			
Carbon Dioxide	0.33			
Methane	17.21	-43.22	-140.9	
Ethane	0.227	-14.4		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	0.0014			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 178

Specific gravity, calculated: 0.904

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.77

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12



#### **Technical Report for**

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WWW02-PUR

Accutest Job Number: TC14971

Sampling Date: 08/17/12

#### Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

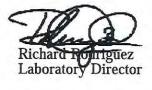
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



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Section 7: GC Volatiles - QC Data Summaries	
7.1: Method Blank Summary	
7.2: Blank Spike Summary	
7.3: Matrix Spike Summary	
7.4: Duplicate Summary	



















## Sample Summary

EarthCon Consultants

Job No:

TC14971

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WWW02-PUR

Sample	Collected			Matrix	Client
Number	Date	Time By	Received	Code Type	Sample ID
TC14971-1	08/17/12	09:05	08/21/12	AO Ground Water	WWW02-PUR-081712





#### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14971

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:58:10 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14971. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VZ3732

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



## Summary of Hits Job Number: TC14971

Page 1 of 1

Account: EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Collected: 08/17/12

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14971-1	WWW02-PUR-08	1712				
Benzene		0.00069 J	0.0010	0.00025	mg/l	SW846 8260B
Methane		4.24	0.050	0.030	mg/l	RSKSOP-147/175
Ethane		0.050 U	0.10	0.050	mg/l	RSKSOP-147/175
Propane		0.0213	0.0015	0.00075	mg/l	RSKSOP-147/175
Isobutane		0.0031	0.0015	0.00075	mg/l	RSKSOP-147/175
Butane		0.0032	0.0015	0.00075	mg/l	RSKSOP-147/175
					327	





Report o	f Analysis	

#### Report of Analysis

Client Sample ID: WWW02-PUR-081712

Lab Sample ID:TC14971-1Date Sampled:08/17/12Matrix:AQ - Ground WaterDate Received:08/21/12

Method: SW846 8260B Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	Z028330.D	1	08/24/12	AK	n/a	n/a	VZ3732
Run #2							

Purge Volume
Run #1 5.0 ml
Run #2

#### **Purgeable Aromatics**

Compound	Result	MQL	SDL	Units	Q
Benzene	0.00069	0.0010	0.00025	mg/l	J
Toluene	0.00026 U	0.0010	0.00026	100000000000000000000000000000000000000	
Ethylbenzene	0.00025 U	0.0010	0.00025		
Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
Surrogate Recoveries	Run# 1	Run# 2	Limits		
Dibromofluoromethane	105%		79-122%		
1,2-Dichloroethane-D4	95%		75-121%		
Toluene-D8	106%		87-119%		
4-Bromofluorobenzene	115%		80-133%		
	Benzene Toluene Ethylbenzene Xylene (total)  Surrogate Recoveries  Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8	Benzene	Benzene 0.00069 0.0010 Toluene 0.00026 U 0.0010 Ethylbenzene 0.00025 U 0.0010 Xylene (total) 0.00071 U 0.0030  Surrogate Recoveries Run# 1 Run# 2  Dibromofluoromethane 105% 1,2-Dichloroethane-D4 95% Toluene-D8 106%	Benzene         0.00069         0.0010         0.00025           Toluene         0.00026 U         0.0010         0.00026           Ethylbenzene         0.00025 U         0.0010         0.00025           Xylene (total)         0.00071 U         0.0030         0.00071           Surrogate Recoveries         Run# 1         Run# 2         Limits           Dibromofluoromethane         105%         79-122%           1,2-Dichloroethane-D4         95%         75-121%           Toluene-D8         106%         87-119%	Benzene         0.00069         0.0010         0.00025         mg/l           Toluene         0.00026 U         0.0010         0.00026 mg/l           Ethylbenzene         0.00025 U         0.0010         0.00025 mg/l           Xylene (total)         0.00071 U         0.0030         0.00071 mg/l           Surrogate Recoveries         Run# 1         Run# 2         Limits           Dibromofluoromethane         105%         79-122%           1,2-Dichloroethane-D4         95%         75-121%           Toluene-D8         106%         87-119%

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



#### Report of Analysis

Client Sample ID: WWW02-PUR-081712

 Lab Sample ID:
 TC14971-1
 Date Sampled:
 08/17/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

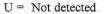
Project: Quarterly Well Sampling, Parker County, Texas

10.50	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003641.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003642.D	100	08/27/12	LT	n/a	n/a	GSS178

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	4.24 a	0.050	0.030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/I	
74-84-0	Ethane	0.050 U a	0.10	0.050	mg/I	
74-98-6	Propane	0.0213	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.0031	0.0015	0.00075	mg/l	
106-97-8	Butane	0.0032	0.0015	0.00075	mg/l	

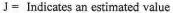
(a) Result is from Run# 2



SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range



B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Custody	Documents and Other Forms	

Chain of CustodyLRC Form



CITTATINE OF C	TICHONS
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Client / Reporting Information	· · · · · · · · · · · · · · · · · · ·		Project	Informa	accutest.	com	(a) 180	73.5	14	O. Land	ANEXIO ST	(Marie and	(E.5)	1555	5	-	-	12.				yses	1	17	4	Matrix Codes
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Project Contact E-mail Gabriela Floreslovo	Project #			Street A	ddress											osi 'e							- 1		1	SED-Sediment OI - Oil LIQ - Other Liquid
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281-201-3513 Sampler(s) Name(s)  John Bruskewitz 4803 004	Project Manage	BF .		Atlention	r:									7	8	Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175									1	WP - Wipe FB-Field Blank
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TC14971: Chain of Custody Page 1 of 3

On les





#### Accutest Laboratories Sample Receipt Summary

Page 1 of 2

	2012		Delivery I	Method		FedEx	Airbill #'s: 795765167616	i		
No. Coolers: 1	Therm	ID: IRGUN	5;				Temp Adjustment Factor:	-0.4;		
Cooler Temps (Initial/Adjusted	i): <u>#1:</u>	(2.8/2.4);								
	or N				or N	Sample Integ	rity - Documentation	Y	or N	
Custody Seals Present:		3. COC I		V		1. Sample labe	ls present on bottles:	$\overline{\mathbf{z}}$		
2. Custody Seals Intact:		4. Smpl Dat	tes/Time OK	$\checkmark$		2. Container la	beling complete:	V		
Cooler Temperature	Y o	r N				3. Sample cont	ainer label / COC agree:	$\checkmark$		
1. Temp criteria achieved:	V					Sample Intec	rity - Condition	Y	or N	
Cooler temp verification:						1. Sample recy	A SALES TO THE STATE OF THE SALES OF THE SAL	V		
3. Cooler media:	Ice	(Bag)	÷			2. All container	s accounted for:		П	
Quality Control Preservation	Y	or N N/	<u>A</u>	WTB	STB	3. Condition of	sample:		Intact	
1. Trip Blank present / cooler:			1	V		Sample Intec	rity - Instructions	Y	or N	N/A
2. Trip Blank listed on COC:			1				quested is clear:	<u> </u>		- 100
3. Samples preserved properly:	V					2. Bottles rece	ived for unspecified tests	ō	✓	
4. VOCs headspace free;	V					3. Sufficient vo	olume recod for analysis:	$\overline{\mathbf{v}}$		
						4. Compositing	g instructions clear:			V
						5. Filtering ins	tructions clear;			V

TC14971: Chain of Custody Page 2 of 3





#### Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14971: Chain of Custody

Page 3 of 3



# Appendix A Laboratory Data Package Cover Page TC14971 This data package consists of

	The second secon	마이크리아 아이들 사람이 되어가 그리고 아이들이 가게 하고 있다고 있다.	checklist, and the following reportable da	ild.
F	R1	Field chain-of-custody docume	ntation;	
E	R2	Sample identification cross-refe	erence;	
Ç.	R3	Test reports (analytical data sh	eets) for each environmental sample that	includes:
		a)	Items consistent with NELAC 5.13	3 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,	
		c)	preparation methods,	
		d)	cleanup methods, and	
		e)	if required for the project, tentative	ely identified compounds (TICs)
Ę.	R4	Surrogate recovery data includ		ny lasitansa sompounts (1100).
-	4.5.1	a)	Calculated recovery (%R), and	
		b)	The laboratory's surrogate QC lim	ite:
17.	R5	Test reports/summary forms for		
è	R6		laboratory control samples (LCSs) inclu	dina
4	IXO		LCS spiking amounts,	ding.
		a)		and .
		b) c)	Calculated %R for each analyte, a	ind
-	R7	The second secon	The laboratory's LCS QC limits.	tank owner.
Ċ.	R/		pike/matrix spike duplicates (MS/MSDs)	
		a)	Samples associated with the MS/I	VISD clearly identified,
		b)	MS/MSD spiking amounts,	
		c)		nalyte measured in the parent and
		d)	Calculated %Rs and relative perc	
	124	e)	The laboratory's MS/MSD QC lim	its
Q.	R8		(if applicable) recovery and precision:	
		a)	The amount of analyte measured	in the duplicate,
		b)	The calculated RPD, and	
		c)	The laboratory's QC limits for ana	lytical duplicates.
Ţ	R9	List of method quantitation limit	s (MQLs) and detectability check sample	e results for each analyte for each
Q.	R10	Other problems or anomalies.		
			(NR)" item in Laboratory Review Checkli	
method	for which the	e laboratory does not hold NELAC	accreditation under the Texas Laborator	y Accreditation Program.
Release	Statement	: I am responsible for the release	of this laboratory data package. This lab	oratory is NELAC accredited under the
			thods, analytes, and matrices reported in	
			iewed by the laboratory and is complete	
	A CONTRACTOR OF THE CONTRACTOR		by the laboratory in the attached except	
		The Part of the Control of the Contr	alies, observed by the laboratory as having	맛 하는 어떻게 되어 하면 살았다면 이렇게 들어야 한다면 하는 아이들이 아니는 아니는 아니는 것이다.
			Laboratory Review Checklist, and no info	
withheld				
Check,	if applicable	e: This laboratory meets an excep	tion under 30 TAC&25.6 and was last in	spection by
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			pril 2011. Any findings affecting the data	
			herein. The official signing the cover page	그래마 그리스테이지 사용하다 하는 그리어 있는 그래마 그래마 가게 되었다.
			g this data package and is by signature a	amrming the above release statement
5100		is true.		
QA Man	The second secon	1910, 190, 0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	I de la
Name (F	Printed)	Signature	Official Title (printed)	Date
		518		Whater Co.
Richard	Rodriguez	- demis	Laboratory Director	8/29/2012
		0		

aboratory	Name:	Accutest Gulf Coast	CHECKLIST: REPORTABLE   LRC Date:		9/20	12		_
aborator)	110.110.	Quarterly Well Sampling, Parker			9120			
roject Na	me:	County, Texas	Laboratory Project Number:	TC	1497	71		
Reviewer		Anita Patel	Prep Batch Number(s):		_	VZ37	32	
#1	A <sup>2</sup>	DESCRIPTION	1, 1-2				NR <sup>4</sup>	ER
R1	OI	CHAIN-OF-CUSTODY (C-O-C):		1.20	110	-	-	-
	-		andard conditions of sample acceptability	100		-		
		upon receipt?		X	J in	10.1		
		Were all departures from standard co	onditions described in an exception report?	X	-			
R2	OI	Sample and quality control (QC) id	lentification		100			
			s-referenced to the laboratory ID numbers?	X				
			referenced to the corresponding QC data?	X				
R3	OI	Test reports	and the sea consequence of the season					-
		Were samples prepared and analyze	ed within holding times?	X				
			all other raw values bracketed by calibration	100				
		standards?	the same of the Sa	Х				
		Were calculations checked by a peer	r or supervisor?	Х				
		Were all analyte identifications check		X		151		
		Were sample detection limits reporte		X		i=U		
			t samples reported on a dry weight basis?			Х		
		Were % moisture (or solids) reported				X		7
			platile analysis extracted with methanol per			Х		
	. 41	SW846 Method 5035?				12.1		
		If required for the project, are TIC's re	eported?			X		
R4	0	Surrogate recovery data	2					
		Were surrogates added prior to extra		X				
D.C.	- 01		all samples within the laboratory QC limits?	X		1		
R5	OI	Test reports/summary forms for b		1			M.A	_
		Were appropriate type(s) of blanks a		X				
		Were blanks analyzed at the appropr	he entire analytical process, including	X	-	-		
		preparation and, if applicable, cleanu		X				
		Were blank concentrations <mql?< td=""><td>ip procedures?</td><td>х</td><td>-</td><td>-</td><td></td><td>_</td></mql?<>	ip procedures?	х	-	-		_
R6	OI	Laboratory control samples (LCS)		^				
110	- 0,	Were all COCs included in the LCS?		X		_	-	
		Was each LCS taken through the ent	tire analytical procedure, including prep and			_		
		cleanup steps?	and any and processing processing processing and	X	Ш			
		Were LCSs analyzed at required free	quency?	Х				
			%Rs within the laboratory QC limits?	X				
		Does the detectablility check sample	data document the laboratory's capability to			17		
		detect the COCs at the MDL used to		X				4
		Was the LCSD RPD within QC limits	?			Х	- 20	
R7	Ol	Matrix spike (MS) and matrix spike						
			nalytes included in the MS and MSD?	X		i gj	194	
		Were MS/MSD analyzed at the appro		X		i e i	I = 7	
		Were MS (and MSD, if applicable) %			Х	1 = 1	1=+	4
		Were the MS/MSD RPDs within labor	oratory QC limits?	Х				
R8	Ol	Analytical duplicate data	The state of the s					
		Were appropriate analytical duplicate		X		i II i	197	
		Were analytical duplicates analyzed	at the appropriate frequency?	X				
-			ations within the laboratory QC limits?	X		121	:=:	
R9	OI	Method quantitation limits (MQLs):		1000				
			te included in the laboratory data package?	X				
		Are upodivisted MOL a and DOC in the	entration of the lowest non-zero calibration	Х				-
D40	01		luded in the laboratory data package?		Х		-	2
R10	OI	Other problems/anomalies	social conditions nated in this LDO and EDO	-			-	-
	1 20 1		pecial conditions noted in this LRC and ER?	X				
_=				Х		- 1	-	
			under the Texas Laboratory Accreditation	3.6				-
		data package?	nd methods associated with this laboratory	Х		0.1		3



Laboratory		Accutest Gulf Coast	LRC Date:		/2012		
Project Na		Quarterly Well Sampling, Parker		_	4971		
Reviewer		Anita Patel	Prep Batch Number(s):	GSS1	78, VZ3	732	
#1	A <sup>2</sup>	DESCRIPTION		YES I	NO NA	NR'	ER
S1	OI	Initial calibration (ICAL)				-	9-
	100	Were response factors and/or relative limits?	e response factors for each analyte within QC	x			
		Were percent RSDs or correlation co	nefficient criteria met?	X		1	+
			mended in the method used for all analytes?	X		+	1
			ne lowest and highest standard used to				-
		calculate the curve?	is remain and ringinger statute about to	X			
		Are ICAL data available for all instrur	nents used?	X		+	1
			verified using an appropriate second source		_	1	1
		standard?	Service and an artist terms are a service according	X			
S2	OI	Initial and continuing calibration v	erification (ICCV AND CCV) and continuing	-			
		Was the CCV analyzed at the metho		Х		1	
			alyte within the method-required QC limits?	X	13	1	1
		Was the ICAL curve verified for each		X	10		
			e concentration in the inorganic CCB <mdl?< td=""><td>-</td><td>X</td><td></td><td>1</td></mdl?<>	-	X		1
S3	0	Mass spectral tuning	3-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13-11-13	-	1 //		
		Was the appropriate compound for the	ne method used for tuning?	X		1	
		Were ion abundance data within the		X			
S4	0	Internal standards (IS)				-	
		Were IS area counts and retention tir	nes within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)					1000
			matograms, spectral data) reviewed by an	1951			
		analyst?		Х			1
		Were data associated with manual in	tegrations flagged on the raw data?	x			
S6	0	Dual column confirmation	3			1	-
		Did dual column confirmation results	meet the method-required QC?		X		
S7	0	Tentatively identified compounds					
	-	If TICs were requested, were the mas checks?	s spectra and TIC data subject to appropriate		×		
S8		Interference Check Sample (ICS) r				_	
30					Tw	-	
S9		Were percent recoveries within meth			X		
39			kes, and method of standard additions	-	4.50	1	-
		specified in the method?	, and the linearity within the QC limits		X	-	
S10	OI	Method detection limit (MDL) studi	00		1 2	_	
010	- Oi	Was a MDL study performed for each		V I		-	
		Is the MDL either adjusted or support		X	-	-	5
S11	OI	Proficiency test reports	ed by the analysis of DC3s?	^		_	5
011	01		ceptable on the applicable proficiency tests or		_		
		evaluation studies?	echiable of the applicable proficiency tests of	X			
S12	OI	Standards documentation		-	-		
			s NIST-traceable or obtained from other	Trails			
		appropriate source?	o the first accepte of obtained from other	X			
S13	OI	Compound/analyte identification p	rocedures		_	-	
		Are the procedures for compound/an		х			
S14	OI	Demonstration of analyst compete		-/-			-
		Was DOC conducted consistent with		ΧI			
		is documentation of the analyst's com		X			
S15	OI		ion for methods (NELAC Chapter 5)	-			
		Are all the methods used to generate	the data documentated, verified, and	100	115		
		validated, where applicable?	2012 Carrie Annual Carrier 1 4 12	Х			
S16	OI	Laboratory standard operating pro	cedures (SOPs)				
		Are laboratory SOPs current and on f		X	1	1	-



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	8/29/2012
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC14971
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS178, VZ3732
ER#	Descript	tion		
1	blank. Th	rting purposes, the MQL is defined in the ne SDL is defined in the report as the MI	DL.	
2		rting purposes, the method blank repres in the laboratory data package.	ents the unadjusted MQL. The DCS i	s on file in the laboratory and is not
3		ratory is NELAC-accredited under the T associated with this laboratory data pac		
4	All anom	alies are discussed in the case narrative	).	
5		oratory does not perform DCS analysis for ave values in the Texas TRRP PCL table		omponents reported are not listed o

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS	Volatiles	

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: SW846 8260B

## Method Blank Summary Job Number: TC14971

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample VZ3732-MB	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
VZ3/32-IVIB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l
108-88-3	Toluene	ND	1.0	0.26	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l
	Se Burde Greeneg				5

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	106%	79-122%
17060-07-0	1,2-Dichloroethane-D4	98%	75-121%
2037-26-5	Toluene-D8	106%	87-119%
460-00-4	4-Bromofluorobenzene	114%	80-133%

Page 1 of 1

Method: SW846 8260B

### Blank Spike Summary

Job Number: TC14971

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	109%	80-133%



<sup>\* =</sup> Outside of Control Limits.

Page 1 of 1

Method: SW846 8260B

## Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC14971

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

		TC14970-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.1	99	72.6	97	2	75-111/12
CAS No.	Surrogate Recoveries	MS	MSD	TO	C14970-1	Limits			
1868-53-7	Dibromofluoromethane	107%	106%	10	4%	79-122	%		
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96	%	75-1219	%		
2037-26-5	Toluene-D8	107%	107%	10	7%	87-119	%		
460-00-4	4-Bromofluorobenzene	113%	113%	11	3%	80-133	%		



<sup>\* =</sup> Outside of Control Limits.



C Data Summaries	

#### Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method: RSKSOP-147/175

Account:

PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/1



Page 1 of 1

## Blank Spike Summary Job Number: TC14971

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample GSS178-BS	<b>File ID</b> SS003615.D	DF 1	<b>Analyzed</b> 08/27/12	By LT	Prep Date n/a	Prep Batch n/a	Analytical Batch GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130



<sup>\* =</sup> Outside of Control Limits.

# 7.3.1 7

Page 1 of 1

Method: RSKSOP-147/175

### **Matrix Spike Summary**

Job Number: TC14971

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

		TC14970-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits
74-82-8	Methane	914 b	21.5	600	-337* a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

<sup>(</sup>a) Outside control limits due to high level in sample relative to spike amount.



<sup>(</sup>b) Result is from Run #2.

<sup>\* =</sup> Outside of Control Limits.

Page 1 of 1

## **Duplicate Summary** Job Number: TC14971

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14971-1

Limits
30
30
30
30
30
30

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



#### ANALYSIS REPORT

Lab #: 261136 Job #: 19036

Sample Name/Number: WWW02-PUR-081712

Company: Oil Tracers, LLC

Date Sampled: 8/17/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical	$\delta^{13}C$	δD	$\delta^{18}O$
20101111 012010	mol. %	%。	%	%。
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	0.543			
Oxygen	3.29			
Nitrogen	23.44			
Carbon Dioxide	0.22			
Methane	67.19	-50.50	-196.0	
Ethane	5.21	-32.50		
Ethylene	nd			
Propane	0.0791	-26.2		
Propylene	nd			
Iso-butane	0.0106			
N-butane	0.0087			
Iso-pentane	0.0027			
N-pentane	0.0014			
Hexanes +	0.0035			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 776

Specific gravity, calculated: 0.702

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.62

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Propane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



Reissue #1 09/06/12



#### **Technical Report for**

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW24-SMI

Accutest Job Number: TC14956

Sampling Date: 08/17/12

#### Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477 gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;

mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 26



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.





Gulf Coast. Inc.

10165 Harwin Drive Houston, TX 77036 Tel: 713-271-4700

www.accutest.com

Thursday, September 06, 2012

EarthCon Consultants 4800 Sugar Grove, Suite 420 Stafford, TX 77477 ATTN: Gabriela Floreslovo

RE: Accutest job TC14956 Reissue

Dear Ms. Floreslovo:

The final report for job number TC14956 has been revised to identify the sampling event as 2nd Quarter.

Please feel free to contact me if I can be of further assistance.

Sincerely,

Elessa Sommers

Elessa Sommers Project Manager



#### Sections:

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## Sample Summary

EarthCon Consultants

Job No:

TC14956

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW24-SMI

Sample	Collected			Matrix	Client
Number	Date	Time By	Received	Code Type	Sample ID
TC14956-1	08/17/12	10:55	08/21/12	AQ Ground Water	WW24-SMI-081712





#### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No. TC14956

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/29/2012 2:02:29 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14956. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AO Batch ID: VK449

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSK SOP-147/175

Matrix AQ Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



## Summary of Hits Job Number: TC14956

Account: EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Collected: 08/17/12

		C
	7	

Page 1 of 1

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14956-1	WW24-SMI-08171	12				
Methane		0.0567	0.00050	0.00030	mg/I	RSKSOP-147/175
Ethane		0.00461	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results	
Report of Analysis	



#### Report of Analysis

Client Sample ID: WW24-SMI-081712

 Lab Sample ID:
 TC14956-1
 Date Sampled:
 08/17/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed By Prep Date Prep Batch **Analytical Batch** Run #1 K10044.D 1 08/23/12 EM n/a n/a VK449 Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	100%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	94%		75-121%		
2037-26-5	Toluene-D8	102%		87-119%		
460-00-4	4-Bromofluorobenzene	122%		80-133%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Client Sample ID: WW24-SMI-081712

 Lab Sample ID:
 TC14956-1
 Date Sampled:
 08/17/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

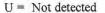
 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003622.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2							

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.0567	0.00050	0.00030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00461	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/1	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	



SDL - Sample Detection Limit

MQL = Method Quantitation Limit



B = Indicates analyte found in associated method blank





E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound



Misc. Forms		

Includes the following where applicable:

- · Chain of Custody
- LRC Form



#### CHAIN OF CUSTODY

ACCUTEST.												FED-E	Tracking #			_	Bottle On	der Control #			
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	Project Name:		Project	Informa	tion.	100	130 7	-	300		包含的		1 1	Re	que	sted	Anal	yses			Matrix Code:
mpany Name															W 1				Milita		
rthCon Consultants, Inc.	Second Quart Street	erly Well Sam	pling, Parke	r Count	y, Texa	5				- Control	Tall - Tall b		lan		90-1			. 1			DW - Drinking W
	Street				100	-			KUNCUM		April 5 and	1	Jet		1				37. 0	1	GW - Ground W
00 Sugar Grove Blvd., Suite 390 State Zip	City		State	Compani	mformation	on ( if di	fferent f	rom F	Report to)	-		1	9						1 1		WW - Water SW - Surface W
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1-201-3513													m Z		113.1		1 1				WP - Wipa
mpler(s) Name(s) Phone #	Project Manager			Attention	t							-	Ethane, Ethene, Isobutane, Methane, by RSK-175						1 1		FB-Fleid Blan
JULIE HELFIRICH (281) 240-5	20	Colle	ribo	Ę	_		Num	· ·	- 1 P			90	를 수				1 1		1 1		
	1	Cons			-	010		per bi j	reserved B	- T	- lul-	8 8	ane							1	
Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottless	HCH NaOH	ZANIAOH	HZSO	NEOH NEOH	dST SP	ENCO!	BTEX 8260B	Butane, Ethane, Ethe Propane by RSK-175								LAB USE ON
WW24-SMI-081712	08/11/12	1055	ILH	W	10	7					1	V	V	_		1					
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Emergency & Rush T/A data available VIA Lablink						Co	mmercia	18.	Results -	QCS								- 0			
SESSION SERVICE DESCRIPTION	San	nole Custody m	uet be decom	nented b	-law	Co	mmercia	1.0	Results -	+ QC 8	Surroga	te Sum	mary	w.c.s.			Ter a language	OHERO MAIN	Series and		
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TC14956: Chain of Custody Page 1 of 3





#### **Accutest Laboratories Sample Receipt Summary**

Accutest Job Number: TC14956 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY FedEx Airbill #'s: 801561645028 Date / Time Received: 8/21/2012 Delivery Method: No. Coolers: Therm ID: IRGUN5; Temp Adjustment Factor: -0.4; Cooler Temps (Initial/Adjusted): #1: (2.8/2.4); Cooler Security Y or N Y or N Sample Integrity - Documentation or N 1. Custody Seals Present: 3. COC Present: V 1. Sample labels present on bottles: 2. Custody Seals Intact: V 4. Smpl Dates/Time OK V V 2. Container labeling complete: 3. Sample container label / COC agree: V Y or N **Cooler Temperature** 1. Temp criteria achieved: V Y N Sample Integrity - Condition 2. Cooler temp verification: V 1. Sample recvd within HT: 3. Cooler media: Ice (Bag) 2. All containers accounted for: V 3. Condition of sample: STB Intact Quality Control Preservation Y or N N/A WTB V 1. Trip Blank present / cooler: V N/A Sample Integrity - Instructions Y or N V 2. Trip Blank listed on COC: 1. Analysis requested is clear: V 3. Samples preserved properly: 2. Bottles received for unspecified tests V V 4. VOCs headspace free: V 3. Sufficient volume recvd for analysis: V 4. Compositing instructions clear: V 5. Filtering instructions clear: V Comments

> TC14956: Chain of Custody Page 2 of 3

Page 1 of 2





#### Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14956: Chain of Custody

Page 3 of 3



### i2

### (J

# Appendix A Laboratory Data Package Cover Page TC14956 This data package consists of

Richard	Rodriguez	- Hen (3)	Laboratory Director	8/29/2012
	4.745	000	Source Vine Verman	2.10
Name (		Signature	Official Title (printed)	Date
QA Mar	nager	is true.		
[1]		noted in the Exception Repo used is responsible for relea	n April 2011. Any findings affecting the data rts herein. The official signing the cover pa sing this data package and is by signature	ge of the report in which these data are
	if applicabl	e: This laboratory meets an exc	ception under 30 TAC&25.6 and was last in	spection by
withheld		identified by the laboratory in the	ne Laboratory Review Checklist, and no info	ormation or data have been knowingly
the Exc	eption Repo	t. This data package has been methods used, except where no	methods, analytes, and matrices reported in reviewed by the laboratory and is complete ofted by the laboratory in the attached excep ornalies, observed by the laboratory as havi	and technically compliant with the tion reports. By my signature below, I
			ise of this laboratory data package. This lal	
			ed (NR)" item in Laboratory Review Checkl AC accreditation under the Texas Laborator	
Þ	R10	Other problems or anomalies		c results for each analyte for each
Ē	R9	and the second s	The laboratory's QC limits for ana mits (MQLs) and detectability check sample	
		b) c)	The calculated RPD, and	stational development
		a)	The amount of analyte measured	in the duplicate,
ŢI.	R8		ate (if applicable) recovery and precision:	a Maria de Maria
riec.	70	e)	The laboratory's MS/MSD QC lim	nits
		d)	Calculated %Rs and relative perc	
		c)		analyte measured in the parent and
		b)	MS/MSD spiking amounts,	
		a)	Samples associated with the MS/	MSD clearly identified,
-	R7		ix spike/matrix spike duplicates (MS/MSDs)	No. 1 and the Control of the Control
	2.2	c)	The laboratory's LCS QC limits.	
		b)	Calculated %R for each analyte,	and
		a)	LCS spiking amounts,	
Q.	R6	Test reports/summary forms	for laboratory control samples (LCSs) inclu	uding:
J,T	R5	Test reports/summary forms	for blank samples;	
		b)	The laboratory's surrogate QC lin	nits.
		a)	Calculated recovery (%R), and	
Q.	R4	Surrogate recovery data incl		
		e)	if required for the project, tentative	ely identified compounds (TICs).
		d)	cleanup methods, and	
		c)	preparation methods,	
		b)	dilution factors,	7.0 (0.0) (0.0)
37	715.	a)		3 or ISO/IEC 17025 Section 5.10
ő	R3		sheets) for each environmental sample tha	t includes:
Ď	R2	Sample identification cross-		
Ò	R1	Field chain-of-custody docu		ata.
- 1	This sta	nature name the laboratory review	ew checklist, and the following reportable d	ata:

aboratory		Accutest Gulf Coast	CHECKLIST: REPORTABLE		29/20	112		
-		Quarterly Well Sampling, Parker						
roject Na		County, Texas	Laboratory Project Number:	_	149	_		
eviewer		Anita Patel	Prep Batch Number(s):			VK4		
#1	A <sup>2</sup>	DESCRIPTION		YES	INO	NA3	NR.	EF
R1	OI	CHAIN-OF-CUSTODY (C-O-C):						
	11	Did samples meet the laboratory's sta upon receipt?	andard conditions of sample acceptability	X				
		Were all departures from standard co	inditions described in an exception report?	X		18	7	
R2	OI	Sample and quality control (QC) id	entification	1115		-	-	
			-referenced to the laboratory ID numbers?	X				П
			eferenced to the corresponding QC data?	X				1
R3	OI	Test reports	and the second policing do and	- /				
1,0		Were samples prepared and analyze	d within holding times?	Х				_
			all other raw values bracketed by calibration		-		-	$\vdash$
		standards?	all other raw values bracketed by calibration	X		L.U	1	
		Were calculations checked by a peer	or supervisor?	X				$\vdash$
		Were all analyte identifications check		x				$\vdash$
		Were sample detection limits reported		x	$\vdash$			-
			samples reported on a dry weight basis?	^		V		$\vdash$
					-	X		-
		Were % moisture (or solids) reported	latile analysis extracted with methanol per	-	-	X		-
		SW846 Method 5035?	iatile analysis extracted with methanol per			X	-	
	100	If required for the project, are TIC's re	norted?			Х	2	⊢
R4	0	Surrogate recovery data	ported?		_	^		
1/4	- 0	Were surrogates added prior to extrac	mion?	V		_		
- 4-			all samples within the laboratory QC limits?	X				-
DE	01			Х				L
R5	OI	Test reports/summary forms for bla						
		Were appropriate type(s) of blanks ar	X			100	_	
		Were blanks analyzed at the appropri		X			1	_
		Were method blanks taken through the		X				
		preparation and, if applicable, cleanu					_	
50		Were blank concentrations <mql?< td=""><td>X</td><td></td><td></td><td>_</td><td></td></mql?<>	X			_		
R6	OI	Laboratory control samples (LCS):						
	100	Were all COCs included in the LCS?		X				
			ire analytical procedure, including prep and	X				
		cleanup steps?						
		Were LCSs analyzed at required freq		X				
		Were LCS (and LCSD, if applicable)		X				
			data document the laboratory's capability to	X				18
		detect the COCs at the MDL used to		1.5	1.5			
-		Was the LCSD RPD within QC limits				Х		
R7	10	Matrix spike (MS) and matrix spike						
	1000	Were the project/method specified an		X	11.			
		Were MS/MSD analyzed at the appro		X				
		Were MS (and MSD, if applicable) %I			Х			
	-	Were the MS/MSD RPDs within labor	ratory QC limits?	X				
R8	OI	Analytical duplicate data						
		Were appropriate analytical duplicate		X				
		Were analytical duplicates analyzed a		X				
-		Were RPDs or relative standard devia		X				
R9	OI	Method quantitation limits (MQLs):						
			e included in the laboratory data package?	Х	11			
			entration of the lowest non-zero calibration	X	1 1.			
		Are unadjusted MQLs and DCSs inclu	uded in the laboratory data package?		Х	1		1.3
R10	OI	Other problems/anomalies		1				
			ecial conditions noted in this LRC and ER?	Х	11			
		Was applicable and available technol	ogy used to lower the SDL to minimize the	X	l: Iri	ri di	-	
		Is the laboratory NELAC-accredited un	nder the Texas Laboratory Accreditation		4.	-		7
			nd methods associated with this laboratory	X				
		data package?		676				1



.aboratory		Accutest Gulf Coast	LRC Date:	8/29/			
roject Na		Quarterly Well Sampling, Parker		TC14			
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS17			
#1	A <sup>2</sup>	DESCRIPTION	A	YES N	O NA3	NR <sup>4</sup>	ER
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relativ	e response factors for each analyte within QC	х			
		Were percent RSDs or correlation co	pefficient criteria met?	Х			16
		Was the number of standards recom	mended in the method used for all analytes?	X			
		Were all points generated between t calculate the curve?	he lowest and highest standard used to	х			
	1	Are ICAL data available for all instrur	ments used?	X	1		-
			verified using an appropriate second source	x			
S2	01	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	verification (ICCV AND CCV) and continuing			-	
- 52	01	Was the CCV analyzed at the metho		X			
			nalyte within the method-required QC limits?	x	1		
		Was the ICAL curve verified for each		X	-		
			e concentration in the inorganic CCB <mdl?< td=""><td>^</td><td>- V</td><td></td><td>-</td></mdl?<>	^	- V		-
00	-		e concentration in the inorganic CCB <mdl?< td=""><td></td><td>X</td><td></td><td></td></mdl?<>		X		
S3	0	Mass spectral tuning	ha mathad ward fact mine?	VI	-		
		Was the appropriate compound for t		X	-		-
-04	-	Were ion abundance data within the	method-required QC limits?	Х			
S4	0	Internal standards (IS)	W. D. W. L. 1. 100 F. 100		-		000
			mes within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)		-	-		
		analyst?	omatograms, spectral data) reviewed by an	x			
		Were data associated with manual in	ntegrations flagged on the raw data?	X			
S6	0	Dual column confirmation					
	1000	Did dual column confirmation results	meet the method-required QC?	( )	X		1
S7	0	Tentatively identified compounds				200	
		If TICs were requested, were the ma- checks?	ss spectra and TIC data subject to appropriate		х		
S8	1	Interference Check Sample (ICS)	results	2	-		
		Were percent recoveries within meth	nod QC limits?		T X		
S9		Serial dilutions, post digestion sp	ikes, and method of standard additions	1000			100
			s, and the linearity within the QC limits		x		
S10	OI	Method detection limit (MDL) stud	ies				
		Was a MDL study performed for eac		X			
		Is the MDL either adjusted or suppor		X			5
S11	01	Proficiency test reports				100	983
			exceptable on the applicable proficiency tests or	x			
S12	OI	Standards documentation				3000	100
	14		es NIST-traceable or obtained from other	х			
S13	OI	Compound/analyte identification p	procedures			-	
		Are the procedures for compound/an		ΧI			
S14	OI	Demonstration of analyst compete			-		
	-	Was DOC conducted consistent with		XI	4 3		
		Is documentation of the analyst's cor		x			
S15	OI		tion for methods (NELAC Chapter 5)	~ 1			
			the data documentated, verified, and	X.	4		
S16	OI	Laboratory standard operating pro	nceduras (SODs)		1		
0.0	01	Are laboratory SOPs current and on		х			



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	8/29/2012
Project Na	me:	Quarterly Well Sampling	, Parker Laboratory Project Number:	TC14956
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS178, VK449
ER#1	Descript	tion		
1	blank. Th	he SDL is defined in the report	ined in the report as the RL. The unadjusted as the MDL.  nk represents the unadjusted MQL. The DCS	
2		in the laboratory data package		is sittle in the laboratory and levilor
3			der the Texas Laboratory Accreditation Progredata package for analytes that are listed in the	
4	All anom	alies are discussed in the case	narrative.	
5		oratory does not perform DCS ave values in the Texas TRRP	analysis for Method RSKSOP-147/175. The PCL tables.	components reported are not listed o
5				

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS	Volatile	es		

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method: SW846 8260B

#### Method Blank Summary

1868-53-7 Dibromofluoromethane

17060-07-0 1,2-Dichloroethane-D4

4-Bromofluorobenzene

2037-26-5 Toluene-D8

460-00-4

Job Number: TC14956

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

79-122%

75-121%

87-119%

80-133%

The QC reported here applies to the following samples:

TC14956-1

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l
108-88-3	Toluene	ND	1.0	0.26	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l
CAS No.	Surrogate Recoveries		Limi	ts	

101%

96%

102%

123%

Method: SW846 8260B

## Blank Spike Summary Job Number: TC14956

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-BS	K10024.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

#### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC14956

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

TC14956-1

	TC14974-3	Spike	MS	MS	MSD	MSD		Limits
Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12
	Benzene Ethylbenzene Toluene	Compound ug/l Q  Benzene 1.0 U Ethylbenzene 1.0 U Toluene 1.0 U	Compound         ug/l         Q         ug/l           Benzene         1.0 U         25           Ethylbenzene         1.0 U         25           Toluene         1.0 U         25	Compound         ug/l         Q         ug/l         ug/l           Benzene         1.0 U         25         24.1           Ethylbenzene         1.0 U         25         25.1           Toluene         1.0 U         25         24.8	Compound         ug/l         Q         ug/l         ug/l         %           Benzene         1.0 U         25         24.1         96           Ethylbenzene         1.0 U         25         25.1         100           Toluene         1.0 U         25         24.8         99	Compound         ug/l         Q         ug/l         ug/l         %         ug/l           Benzene         1.0 U         25         24.1         96         23.3           Ethylbenzene         1.0 U         25         25.1         100         24.2           Toluene         1.0 U         25         24.8         99         23.8	Compound         ug/l         Q         ug/l         ug/l         %         ug/l         %           Benzene         1.0 U         25         24.1         96         23.3         93           Ethylbenzene         1.0 U         25         25.1         100         24.2         97           Toluene         1.0 U         25         24.8         99         23.8         95	Compound         ug/l         Q         ug/l         ug/l         %         ug/l         %         RPD           Benzene         1.0 U         25         24.1         96         23.3         93         3           Ethylbenzene         1.0 U         25         25.1         100         24.2         97         4           Toluene         1.0 U         25         24.8         99         23.8         95         4

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2



<sup>\* =</sup> Outside of Control Limits.



QC Data Summaries	

merades the following where app

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: RSKSOP-147/175

### Method Blank Summary Job Number: TC14956

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	<b>File ID</b>	<b>DF</b>	<b>Analyzed</b> 08/27/12	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1		LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l

#### Blank Spike Summary

Job Number:

TC14956

Account:

PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample File ID DF Analyzed By Prep Date Prep Batch **Analytical Batch** GSS178-BS SS003615.D 1 08/27/12

LT **GSS178** n/a n/a

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits	
74-82-8	Methane	21.5	20.8	97	70-130	
74-85-1	Ethene	57.4	58.2	101	70-130	
74-84-0	Ethane	43.3	41.8	97	70-130	
74-98-6	Propane	60.6	56.5	93	70-130	
75-28-5	Isobutane	72.5	71.1	98	70-130	
106-97-8	Butane	76.6	73.7	96	70-130	



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

### Matrix Spike Summary Job Number: TC14956

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

		TC14970-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/I	ug/l	%	Limits
74-82-8	Methane	914 b	21.5	600	-337* a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

<sup>(</sup>a) Outside control limits due to high level in sample relative to spike amount.



<sup>(</sup>b) Result is from Run #2.

<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

## **Duplicate Summary** Job Number: TC14956

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14956-1

		TC1 1070 1	nrin				
CAS No.	Compound	TC14970-1 ug/l Q	DUP ug/l	Q	RPD	Limits	
74-82-8	Methane	914 a	869	Е	26	30	
74-85-1	Ethene	1.0 U	ND		nc	30	
74-84-0	Ethane	42.3	57.4		30	30	
74-98-6	Propane	1.5 U	ND		nc	30	
75-28-5	Isobutane	1.5 U	ND		nc	30	
106-97-8	Butane	1.5 U	ND		nc	30	

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



#### ANALYSIS REPORT

Lab #: 261137 Job #: 19036

Sample Name/Number: WW24-SMI-081712 Company: Oil Tracers, LLC

Date Sampled: 8/17/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Chemical δ13C  $\delta^{18}O$  $\delta D$ Component mol. % % % % Carbon Monoxide ----nd Hydrogen Sulfide ----na Helium ----na Hydrogen ----nd Argon -----1.20 Oxygen -----15.67 Nitrogen ----- 82.07 Carbon Dioxide -----0.37 Methane -----0.675 Ethane -----0.0194 Ethylene ----nd Propane -----0.0005 Propylene ----nd Iso-butane ----nd N-butane ----nd Iso-pentane ----nd

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 7

nd

nd

Specific gravity, calculated: 0.993

Remarks:

N-pentane -----

Hexanes + -----

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.78

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12



#### **Technical Report for**

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW13-STR

Accutest Job Number: TC14969

Sampling Date: 08/18/12

#### Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

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#### Sample Summary

EarthCon Consultants

Job No:

TC14969

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW13-STR

Sample Collect				Matri	x	Client	
Number	Date	Time By	Received	Code	Type	Sample ID	
TC14969-1	08/18/12	11:55	08/21/12	AQ	Ground Water	WW13-STR-081812	





#### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14969

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:55:29 PM

1 Sample was collected on 08/18/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14969. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VZ3732

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



## Summary of Hits Job Number: TC14969

EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas 08/18/12 Project:

Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14969-1	WW13-STR-08181	12				
Methane		3.48	0.025	0.015	mg/l	RSKSOP-147/175
Ethane		0.334	0.0010	0.00050	mg/l	RSKSOP-147/175



Page 1 of 1



Report of Analysis	



#### Report of Analysis

Client Sample ID: WW13-STR-081812

 Lab Sample ID:
 TC14969-1
 Date Sampled:
 08/18/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

DF File ID Analyzed By Prep Date Prep Batch **Analytical Batch** Run #1 Z028329.D 1 08/24/12 AK n/a n/a VZ3732 Run #2

Purge Volume
Run #1 5.0 ml

Run #2

#### **Purgeable Aromatics**

54 7 20 22	E	E. 1753		4.2.2		1.23
CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	103%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	91%		75-121%		
2037-26-5	Toluene-D8	104%		87-119%		
460-00-4	4-Bromofluorobenzene	112%		80-133%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





#### Report of Analysis

Client Sample ID: WW13-STR-081812

 Lab Sample ID:
 TC14969-1
 Date Sampled:
 08/18/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

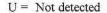
Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003639.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003640.D	50	08/27/12	LT	n/a	n/a	GSS178

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	3.48 a	0.025	0.015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.334	0.0010	0.00050	mg/I	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2



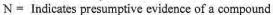
SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range



B = Indicates analyte found in associated method blank









Misc. F	
Custody	Documents and Other Forms

Chain of CustodyLRC Form



<u>EACCUTEST</u>				i lare								FED-EX	Tracking #	_		Bo	ttle Order	Control #		_	
Laboretoiles			10165 Has TEL. 71	win Dr. Si 3-271-470								Accutes	1 Quote #			Ac	tot testura		7		ol a
Client / Reporting Information	<b>元</b> 马斯西克姆	URAL DESCRIPTION			accuteste		FREE LARNE	SUPPLIES.	4056.20	SCP/MA	SOLUMB			-			o Control			1	1969
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Company Name													10,								
EarthCon Consultants, Inc. Second Quarterly Well Sampling, Parker Street Address Street				er County, Texas							thar								DW - Drinking W GW - Ground Wa		
800 Sugar Grove Blvd., Suite 390	Bivd., Suite 390         Billing           State         Zip         City         State         Compar           TX         77477         TX         TX				nformatio								. ™e								WW - Water
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81-201-3513 ampler(s) Name(s) Phone #				Attaction									Bulane, Ethane, Ethane, laobulane, Mothane, Propane by RSK-175								WP - Wipe FB-Field Blan
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Field ID / Point of Collection	Date	Time	Sampled By	Matrix	bottles	3 8	ENAZ HW03	HZSO4	DI Wa	TSP NaHSO	8 E	BT	9 2								LAB USE ON
WW13-STK-081812	08/18/12	1155	JLH	W	0	X						X	X			1-1					
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TC14969: Chain of Custody Page 1 of 3





#### Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 8/21/2	2012		Delivery	Method	ė.	FedEx	Airbill #'s: 801561645028	3			
No. Coolers: 1		ID: IRGUN					Temp Adjustment Factor:				
Cooler Temps (Initial/Adjusted	d): #1:(	2.3/1.9);									
	or N				or N	Sample Int	egrity - Documentation	Y	or	N	
Custody Seals Present:		3, COC		V		1. Sample la	abels present on bottles:				
2. Custody Seals Intact:		4. Smpl Dat	es/Time OK	V		2. Containe	labeling complete:	V			
ooler Temperature	Y or	N				3. Sample of	ontainer label / COC agree:	V			
Temp criteria achieved:	V					Sample In	tegrity - Condition	Y	or	N	
Cooler temp verification:						1	ecvd within HT:	V		П	
3. Cooler media:	Ice (	(Bag)	-			Design Control	ners accounted for:	V		П	
Quality Control Preservation	Yo	r N N/	<u>A</u>	WTB	STB	3. Condition	of sample:		Intac		
1, Trip Blank present / cooler:	$\mathbf{Z}$			$ \mathbf{V} $		Sample In	tegrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						200	requested is clear:	~			
3. Samples preserved properly:	$\mathbf{V}$					2. Bottles r	eceived for unspecified tests			<b>V</b>	
4. VOCs headspace free:						3. Sufficien	t volume recvd for analysis:	~			
						4. Compos	ting instructions clear:				V
						5. Filtering	instructions clear:				V
						_				-	

TC14969: Chain of Custody

Page 2 of 3





#### Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable,	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14969: Chain of Custody

Page 3 of 3





### Appendix A Laboratory Data Package Cover Page

TC14969 This data package consists of

This signature page, the laboratory review checklist, and the following reportable data:

U Field chain-of-custody documentation; D.D. R2 Sample identification cross-reference; R3 Test reports (analytical data sheets) for each environmental sample that includes: Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10 a) b) dilution factors. C) preparation methods, d) cleanup methods, and if required for the project, tentatively identified compounds (TICs). e) R4 Surrogate recovery data including: Calculated recovery (%R), and a) b) The laboratory's surrogate QC limits. R5 Test reports/summary forms for blank samples; Ū R6 Test reports/summary forms for laboratory control samples (LCSs) including: LCS spiking amounts, a) Calculated %R for each analyte, and b) The laboratory's LCS QC limits. C) Ü R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: Samples associated with the MS/MSD clearly identified, b) MS/MSD spiking amounts, Concentration of each MS/MSD analyte measured in the parent and c) d) Calculated %Rs and relative percent differences (RPDs), and e) The laboratory's MS/MSD QC limits R8 D Laboratory analytical duplicate (if applicable) recovery and precision: a) The amount of analyte measured in the duplicate, b) The calculated RPD, and c) The laboratory's QC limits for analytical duplicates. List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each R9 R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

IX1TCEQ or [1		
noted in the Exception Rep	ports herein. The official signing the cover pa	
Signature	Official Title (printed)	Date
There	Laboratory Director	8/29/2012
	used is responsible for rele is true.	Signature Official Title (printed)



aboratory		Accutest Gulf Coast	CHECKLIST: REPORTABLE		29/20	12		_		
1.793		Quarterly Well Sampling, Parker	ISV UKS ATA AS	16.7	A					
roject Na		County, Texas	Laboratory Project Number:	_	1496					
eviewer		Anita Patel	Prep Batch Number(s):	GSS178, VZ3732 YES NO NA NR*II						
#	A <sup>2</sup>	DESCRIPTION		YES	NO	NA <sup>3</sup>	NR <sup>4</sup>	EF		
R1 OI		CHAIN-OF-CUSTODY (C-O-C):								
		Did samples meet the laboratory's sta upon receipt?	andard conditions of sample acceptability	X						
		Were all departures from standard co	X							
R2	OI	Sample and quality control (QC) id		500						
		Are all field sample ID numbers cross	X	211		== (	Т			
		Are all laboratory ID numbers cross-r	X	1						
R3	OI	Test reports								
		Were samples prepared and analyze	d within holding times?	X						
		Other than those results <mql, standards?<="" td="" were=""><td>X</td><td></td><td></td><td></td><td></td></mql,>	X							
		Were calculations checked by a peer	X							
	1	Were all analyte identifications check	x							
		Were sample detection limits reported	X				-			
		Were all results for soil and sediment			Х	$\dashv$	-			
		Were % moisture (or solids) reported			X	=	-			
		Were bulk soils/solids samples for vo			100		-			
		SW846 Method 5035?			X					
		If required for the project, are TIC's re			X		Т			
R4	0	Surrogate recovery data		160	200		-			
		Were surrogates added prior to extra	Х	141			Т			
		Were surrogate percent recoveries in	all samples within the laboratory QC limits?	X	= 11			Т		
R5	OI	Test reports/summary forms for bl								
	T	Were appropriate type(s) of blanks ar		Х		100				
	Were blanks analyzed at the appropr		X	771						
	Were method blanks taken through the	ne entire analytical process, including					_			
		preparation and, if applicable, cleanu		X						
		Were blank concentrations < MQL?		X	317	100				
R6	OI	Laboratory control samples (LCS):		100			300			
		Were all COCs included in the LCS?		X		) III		E		
		Was each LCS taken through the ent	ire analytical procedure, including prep and	x	1	100	101	7		
		cleanup steps?		^	1.16					
1		Were LCSs analyzed at required freq		X	F. 1					
		Were LCS (and LCSD, if applicable)		X	111		100			
			data document the laboratory's capability to	x				h		
		detect the COCs at the MDL used to		^	14.			止		
		Was the LCSD RPD within QC limits	?			Х				
R7	01	Matrix spike (MS) and matrix spike								
		Were the project/method specified an		X						
		Were MS/MSD analyzed at the appro		X			100			
		Were MS (and MSD, if applicable) %			Х	(III)	= 1			
-		Were the MS/MSD RPDs within labor	ratory QC limits?	Х						
R8	OI	Analytical duplicate data								
		Were appropriate analytical duplicate		Х						
_ II	10.00	Were analytical duplicates analyzed a		X		11				
-	-20		ations within the laboratory QC limits?	X						
R9	01	Method quantitation limits (MQLs):		1		250	-			
1		Are the MQLs for each method analyt	X							
			entration of the lowest non-zero calibration	X						
Dic		Are unadjusted MQLs and DCSs incl	uded in the laboratory data package?		Х	151	LT L	1.7		
R10	OI	Other problems/anomalies	-2-1		-		-			
	1 3/2		ecial conditions noted in this LRC and ER?	X						
-			ogy used to lower the SDL to minimize the	Х		4 1 1				
	173		nder the Texas Laboratory Accreditation nd methods associated with this laboratory	х				200		



Laboratory					8/29/2012		
Project Na	me:	Quarterly Well Sampling, Parker Laboratory Project Number:		TC14969			
Reviewer		Anita Patel	Prep Batch Number(s):	GSS17	8, VZ37	32	
#1	A <sup>2</sup>	DESCRIPTION		YES N	O NA3	NR" ER#	
S1	OI	Initial calibration (ICAL)					
			e response factors for each analyte within QC	x			
		limits?		1.22			
		Were percent RSDs or correlation co		X	100		
			mended in the method used for all analytes?	X			
	ł		he lowest and highest standard used to	х			
		calculate the curve?		^			
		Are ICAL data available for all instrur		X	1		
		Has the initial calibration curve been	verified using an appropriate second source	x			
	1 - 1 -	standard?		^			
\$2	OI	Initial and continuing calibration v	erification (ICCV AND CCV) and continuing		0.000		
		Was the CCV analyzed at the metho	d-required frequency?	X		-	
		Were percent differences for each ar	nalyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each	analyte?	X			
		Was the absolute value of the analyt	e concentration in the inorganic CCB <mdl?< td=""><td>11111</td><td>X</td><td></td></mdl?<>	11111	X		
\$3	0	Mass spectral tuning		1500	1		
		Was the appropriate compound for the	ne method used for tuning?	X	T		
		Were ion abundance data within the		X			
S4	0	Internal standards (IS)			90	-	
			mes within the method-required QC limits?	ΧI	1		
S5	OI	Raw data (NELAC Section 5.5.10)	nes mana are meanes requires de minio.	^			
	-		omatograms, spectral data) reviewed by an	100			
		analyst?	mining famile, opeonial action for foreign by tar	X			
	100	Were data associated with manual in	tegrations flagged on the raw data?	X	1		
S6	0	Dual column confirmation	legitatoris hagged on the raw data:	^		-	
	-	Did dual column confirmation results	meet the method-required OC2		X		
S7	0	Tentatively identified compounds			1 ^		
- 01	-		ss spectra and TIC data subject to appropriate	1			
		checks?	ss spectra and The data subject to appropriate		X		
S8	- 1	Interference Check Sample (ICS) r	equile.		لسان		
		Were percent recoveries within meth			I x I		
S9	1		kes, and method of standard additions		1.		
- 00			, and the linearity within the QC limits		7	$\neg$	
	100	specified in the method?	, and the intearty within the QO innis		X		
S10	OI	Method detection limit (MDL) studi	000		لنشيان	_	
010	- 01	Was a MDL study performed for each		X			
	1	Is the MDL either adjusted or suppor		X	+	5	
S11	OI	Proficiency test reports	ted by the analysis of DC3s?	^		1 0	
011	01		ceptable on the applicable proficiency tests or			-	
		evaluation studies?	ceptable of the applicable proficiency tests of	X			
S12	OI	Standards documentation			1		
312	O.		s NIST-traceable or obtained from other		-		
		appropriate source?	is INIST-traceable of obtained from other	X	1		
S13	OI	Compound/analyte identification p	and the same of th			_	
313	Oi	Are the procedures for compound/an		VI	1		
S14	OI			Х			
314	U	Demonstration of analyst compete		VI			
		Was DOC conducted consistent with		X			
S15	OI	Is documentation of the analyst's con		X		1 - 1	
315	U		tion for methods (NELAC Chapter 5)	-	7 - 7		
			the data documentated, verified, and	X			
040	- 01	validated, where applicable?			1		
S16	01	Laboratory standard operating pro		6-1-	-		
	1	Are laboratory SOPs current and on t	ile for each method performed?	X		1 7 1 10 70	



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oratory and is no
, matrices, and Accreditation.
ed are not listed

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS	Volatiles	

QC Data Summaries

#### Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method: SW846 8260B

#### Method Blank Summary

Job Number: TC14969

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732
						30.3	

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l
108-88-3	Toluene	ND	1.0	0.26	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l
CAS No.	Surrogate Recoveries		Limit	ts	

A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	77 ALC - 18 ALC - 17		
1868-53-7	Dibromofluoromethane	106%	79-122%
17060-07-0	1,2-Dichloroethane-D4	98%	75-121%
2037-26-5	Toluene-D8	106%	87-119%
460-00-4	4-Bromofluorobenzene	114%	80-133%

Method: SW846 8260B

### Blank Spike Summary Job Number: TC14969

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	109%	80-133%



<sup>\* =</sup> Outside of Control Limits.

## Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

C12.6	2	TC14970-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.1	99	72.6	97	2	75-111/12
CAS No.	Surrogate Recoveries	MS	MSD	TO	C14970-1	Limits			
1868-53-7	Dibromofluoromethane	107%	106%	10-	4%	79-1229	%		
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96	%	75-1219	%		
2037-26-5	Toluene-D8	107%	107%	10	7%	87-1199	%		
460-00-4	4-Bromofluorobenzene	113%	113%	11	3%	80-1339	%		



<sup>\* =</sup> Outside of Control Limits.



GC Vola	-	

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l

Method: RSKSOP-147/175

#### Blank Spike Summary

Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

GSS178-BS SS003615.D 1 08/27/12 LT n/a n/a GSS178	CCC170		Prep Date	By	Analyzed	DF	File ID	Sample
	0551/6	n/a	n/a	LT	08/27/12	1	SS003615.D	GSS178-BS

The QC reported here applies to the following samples:

Compound	Spike ug/l	BSP ug/l	BSP %	Limits
Methane	21.5	20.8	97	70-130
Ethene	57.4	58.2	101	70-130
Ethane	43.3	41.8	97	70-130
Propane	60.6	56.5	93	70-130
Isobutane	72.5	71.1	98	70-130
Butane	76.6	73.7	96	70-130
	Methane Ethene Ethane Propane Isobutane	Compound         ug/l           Methane         21.5           Ethene         57.4           Ethane         43.3           Propane         60.6           Isobutane         72.5	Compound         ug/l         ug/l           Methane         21.5         20.8           Ethene         57.4         58.2           Ethane         43.3         41.8           Propane         60.6         56.5           Isobutane         72.5         71.1	Compound         ug/l         ug/l         %           Methane         21.5         20.8         97           Ethene         57.4         58.2         101           Ethane         43.3         41.8         97           Propane         60.6         56.5         93           Isobutane         72.5         71.1         98



<sup>\* =</sup> Outside of Control Limits.

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Page 1 of 1

Method: RSKSOP-147/175

#### Matrix Spike Summary

Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

		TC14970-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits
74-82-8	Methane	914 b	21.5	600	-337* a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

<sup>(</sup>a) Outside control limits due to high level in sample relative to spike amount.



<sup>(</sup>b) Result is from Run #2.

<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

### **Duplicate Summary** Job Number: TC14969

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14969-1

		TC14970-1	DUP			
CAS No.	Compound	ug/I Q	ug/l	Q	RPD	Limits
74-82-8	Methane	914 a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



#### ANALYSIS REPORT

Lab #: 261144 Job #: 19036

Sample Name/Number: WW13-STR-081812

Company: Oil Tracers, LLC

Date Sampled: 8/18/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical	$\delta^{13}C$	δD	δ <sup>18</sup> O
	mol. %	%	%	%。
Carbon Monoxide	nd	-		
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	0.212			
Oxygen	0.019			
Nitrogen	60.18			
Carbon Dioxide	0.47			
Methane	37.22	-45.74	-173.6	
Ethane	1.89	-31.15		
Ethylene	nd			
Propane	0.0004			
Propylene	nd			
Iso-butane	nd			
N-butane	0.0019			
Iso-pentane	0.0011			
N-pentane	nd			
Hexanes +	0.0008			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 411

Specific gravity, calculated: 0.818

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.73

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



09/06/12



#### **Technical Report for**

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW18-STR

Accutest Job Number: TC15481

Sampling Date: 08/28/12

#### Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;

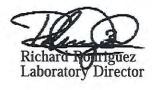
mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

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### Sample Summary

EarthCon Consultants

Job No:

TC15481

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW18-STR

Sample	Collected			Matrix	Client
Number	Date	Time By	Received	Code Type	Sample ID
TC15481-1	08/28/12	13:50	08/29/12	AQ Ground Water	WW18-STR-082812





#### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC15481

Site: Quarterly Well Sampling, Parker County, Texas Report Date 9/6/2012 5:50:17 PM

1 Sample was collected on 08/28/2012 and received intact at Accutest on 08/29/2012 and properly preserved in 1 cooler at 3.3 Deg C. The sample received an Accutest job number of TC15481. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VC1174

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC15249-4MS, TC15249-4MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS181

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- = Sample(s) TC15494-1MS, TC15494-2DUP were used as the QC samples indicated.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



## Summary of Hits Job Number: TC15481

Account: EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Collected: 08/28/12

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method	
TC15481-1	WW18-STR-0828	12					
Methane		0.944	0.0050	0.0030	mg/l	RSKSOP-147/175	
Ethane		0.0512	0.0010	0.00050	mg/l	RSKSOP-147/175	



Page 1 of 1





Report of An	alysis	



#### Report of Analysis

Client Sample ID: WW18-STR-082812

Lab Sample ID: TC15481-1 Date Sampled: 08/28/12 Matrix: AQ - Ground Water Date Received: 08/29/12 Method: SW846 8260B Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed By Prep Date Prep Batch **Analytical Batch** Run #1 C00255003.D 1 08/31/12 CF n/a n/a VC1174 Run #2

Purge Volume Run #1 5.0 ml

Run #2

#### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	94%		72-122%		
17060-07-0	1,2-Dichloroethane-D4	89%		68-124%		
2037-26-5	Toluene-D8	99%		80-119%		
460-00-4	4-Bromofluorobenzene	95%		72-126%		

SDL - Sample Detection Limit MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound



U = Not detected

Client Sample ID: WW18-STR-082812

Lab Sample ID: TC15481-1 Date Sampled: 08/28/12 Matrix: AQ - Ground Water Date Received: 08/29/12 Method: RSKSOP-147/175 Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

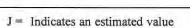
	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003716.D	1	09/04/12	LT	n/a	n/a	GSS181
Run #2	SS003717.D	10	09/04/12	LT	n/a	n/a	GSS181

Report of Analysis

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.944 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0512	0.0010	0.00050	mg/1	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2



B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range



Misc. Forms	
Custody Documents and Other	Forms

Chain of CustodyLRC Form

	ACCUTEST			10165 Ha	rwin Dr. S	te 150 H	ousto	n. TX	77036						FED-E	X Trackin	7.0	_	_		Bottle O	order Cont	1	_		
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	Client / Reporting Information	<b>新五次。这种</b>		Project				4	The same	458	Tar.	A. 14	165	514			-	Req	ues	ted .	Ana	lvse	5		٦	Matrix Codes
Compa	ny Name	Project Name														12-1				771			75			
Earth	Con Consultants, Inc.	Second Quar	terly Well Sam	pling, Parke	r Coun	ty, Texa	ıs									aue,		м				10				
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4800 S	Sugar Grove Blvd., Suite 390 State Zip	City		State	Billing	Informati	ion (	f diffe	rent fr	m Re	port	to)		-		, P.	l l									WW - Water SW - Surface Water
Staffo		100			Journal of the second	, , , , , , , , , , , , , , , , , , , ,										utar	1									SO - Soil SL- Sludge
	Contact E-mail	Project #			Street A	ddress			-					-	8 0	sop				9. 1						SED-Sediment
	la Floreslovo															9.	Ы									LIQ - Other Liquid
Phone i		Client Purchase	Order#		City				5	tate			Ζφ			the						l I				AIR - Air SOL - Other Solid
	1-3513 r(s) Name(s) Phone #	Project Manager	_	_	Attention	10					_	_	_			SK.										WP - Wipe FB-Field Blank
Ju	LIE HELFRICH (281)240-520	,													8	thar										
			Colle	ction				-	Numbe	r of pre	serve	d Bottle	is .		926	e, E										
Acquises Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HQ.	NaOH	HWO	NONE	DIWMer	TSP	NaHSO4	OTHER	BTEX 8260B	Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175										LAB USE ONLY
1	WW18-STR-082812	08/28/12	13:50	JLH	W	10	X			10			П		X	X								7		
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	X Standard	Approved By (Accur	est PM): / Oate:		_	Commen						TE													3.01.110.5	
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	3 Day RUSH					REDT1 (					L	70	rues _													
	2 Day RUSH					Commen	clal "	C"									-						-			
	1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink								ercial *										_							
	Errorgente) a reast tre data available vis Catonik							Comm	ercial "	C" = R	esult	s + Q	2 & Su	mogat	e Sumr	nary										
PERM	pulshed by Sarofiles:	San / 09:40	nple Custody mu	sat be aroum	ented be	low eac	h tin	ne sar	nples Report			0880	slon,	inclu	ding o	ourler								11.		数数PODE E
1	Will Melond 08/2	1/12	7	/	_	-	_	~	2	ursne o	Dy:							ate Tim	e:	1	Received	d By:				
Parno	pulshed by Sampler: Date Time:	1	Received By:				1		Religa	uished	By:							ate Tim	0:	-	Received	d Dy:			-	
Raling	uished by: Date Time:		Received By:					_	Gusto		_	_		П	Intart					4	4		370			

TC15481: Chain of Custody Page 1 of 3





#### Accutest Laboratories Sample Receipt Summary

Page 1 of 2

the first of the f	2012		Delivery I	Method	:	Airbill #'s:				
No. Coolers: 1	Ther	m ID: IF	RGUN5			Temp Adjustment Factor:	-0.4			
Cooler Temps (Initial/Adjusted	d): <u>#1</u>	1: (3.7/3.	<u>3)</u>							
Cooler Security Y	or N			Y	or N	Sample Integrity - Documentation	<u>Y</u>	or	N	
Custody Seals Present:			. COC Present:	V		Sample labels present on bottles:	V			
2. Custody Seals Intact:		] 4. Sr	mpl Dates/Time OK	V		2. Container labeling complete:	V			
Cooler Temperature	Y	or N				3. Sample container label / COC agree:	V			
1. Temp criteria achieved:	~					Sample Integrity - Condition	Y	or	N	
Cooler temp verification:	~	5 HOCK				Sample recvd within HT:	V			
Cooler media:	lo	ce (Bag)	-			All containers accounted for:			П	
Quality Control Preservation	Y	or N	N/A	WTB	STB	3. Condition of sample:		Intac	t	
1. Trip Blank present / cooler;						Sample Integrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:		✓				Analysis requested is clear:	V			
<ol><li>Samples preserved properly:</li></ol>	V					2. Bottles received for unspecified tests			V	
4. VOCs headspace free:	~					3. Sufficient volume recvd for analysis:	<b>V</b>			
						4. Compositing instructions clear:				~
						5. Filtering instructions clear:				V

TC15481: Chain of Custody

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1.0



#### Sample Receipt Log

Page 2 of 2

Job #: TC15728

Date / Time Received: 9/4/2012 2:52:00 PM

Initials: CH

Client: DOW CHEMICAL

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC15728-1	32oz	1	2-84	N/P	Note #2 - Preservative check not applicable.	IRGUN5	1.1	-0.4	0.7
1	TC15728-2	32oz	1	2-84	N/P	Note #2 - Preservative check not applicable.	IRGUN5	1.1	-0.4	0.7

TC15481: Chain of Custody

Page 3 of 3

## Appendix A Laboratory Data Package Cover Page TC15481 This data package consists of

U	This sig	nature page, the laboratory review	ew checklist, and the following reportable data:
Ū.	R1	Field chain-of-custody document	mentation;
Q.	R2	Sample identification cross-	reference;
Q.	R3	Test reports (analytical data	sheets) for each environmental sample that includes:
9		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
	R4	Surrogate recovery data incl	
01		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
0	R5	Test reports/summary forms	for blank samples;
II.	R6	Test reports/summary forms	for laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
	R7	Test reports for project matri	x spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
	R8	Laboratory analytical duplica	ate (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
D.	R9	List of method quantitation li	mits (MQLs) and detectability check sample results for each analyte for each
	R10	Other problems or anomalies	
Fyce	ention Ren	ort for each "No" or "Not Review	ed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, a
			ed (NK) Item in Laboratory Review Checklist and for each analyte, matrix, and

method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of

withheld.	identified by the laboratory i	n the Laboratory Review Checklist, and no inte	ormation or data have been knowingly
Check, if applicab	le: This laboratory meets an	exception under 30 TAC&25.6 and was last in	spection by
II		on April 2011. Any findings affecting the dat ports herein. The official signing the cover pa leasing this data package and is by signature	ge of the report in which these data are
QA Manager			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	_ There	Laboratory Director	9/6/2012



aboratory		Accutest Gulf Coast	CHECKLIST: REPORTABLE		/201	2		_
		Quarterly Well Sampling, Parker	Control of the contro					
roject Na		County, Texas	Laboratory Project Number:	-	1548	_		-
eviewer		Anita Patel	Prep Batch Number(s):		181,			
#1	A <sup>2</sup>	DESCRIPTION		YES	NO	NA	NR.	EF
R1	OI	CHAIN-OF-CUSTODY (C-O-C):	and and an adding a property or a sale 11%.				-	_
		upon receipt?	andard conditions of sample acceptability	Х				
		Were all departures from standard co	onditions described in an exception report?	X				
R2	OI	Sample and quality control (QC) id		100				
		Are all field sample ID numbers cross	s-referenced to the laboratory ID numbers?	X		134		
		Are all laboratory ID numbers cross-re	eferenced to the corresponding QC data?	X			ZE L	
R3	10	Test reports					100	
		Were samples prepared and analyze		X			7.7	
			all other raw values bracketed by calibration	x				
		standards?		1000	- 1			
		Were calculations checked by a peer		X		15		1.
		Were all analyte identifications check		X		1		
		Were sample detection limits reported		X		Title I		
			samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported				X		
			platile analysis extracted with methanol per			X		
		SW846 Method 5035?  If required for the project, are TIC's re	anorted?	-		Х		-
R4	0	Surrogate recovery data	sported :	1		^	-	-
144	-	Were surrogates added prior to extra	rtion?	X		_		_
			all samples within the laboratory QC limits?	x		-		$\vdash$
R5	OI	Test reports/summary forms for bl		_			-	
110	-	Were appropriate type(s) of blanks ar		Х			1151	1
		Were blanks analyzed at the appropri	•	X		_		
		Were method blanks taken through the						
		preparation and, if applicable, cleanu		X				
		Were blank concentrations <mql?< td=""><td></td><td>X</td><td></td><td></td><td></td><td></td></mql?<>		X				
R6	OI	Laboratory control samples (LCS):						
		Were all COCs included in the LCS?		X				
		Was each LCS taken through the ent	ire analytical procedure, including prep and	х	-		131	
		cleanup steps?		^				
		Were LCSs analyzed at required freq		X				
		Were LCS (and LCSD, if applicable)		X				
			data document the laboratory's capability to	x				
		detect the COCs at the MDL used to		^				
		Was the LCSD RPD within QC limits				Х		
R7	OI	Matrix spike (MS) and matrix spike		-	-	_		
		Were the project/method specified an		X				_
		Were MS/MSD analyzed at the appro		X				-
		Were MS (and MSD, if applicable) %		X	$\vdash$			-
R8	OI	Were the MS/MSD RPDs within labor	ratory QC limits?	X	ш			
No.	UI	Analytical duplicate data	a analysis for each westing	V	-			
		Were appropriate analytical duplicate Were analytical duplicates analyzed a		X	$\vdash$	-	-	-
			ations within the laboratory QC limits?	X				-
R9	OI	Method quantitation limits (MQLs):		^	-			
110	- 01		te included in the laboratory data package?	X		-		
			entration of the lowest non-zero calibration	x				$\vdash$
		Are unadjusted MQLs and DCSs incl	uded in the laboratory data package?	^	х			18
R10	OI	Other problems/anomalies	The same of the sa	1	1			
-14-7			ecial conditions noted in this LRC and ER?	Х			1	
			logy used to lower the SDL to minimize the	X		100		
			inder the Texas Laboratory Accreditation					
			nd methods associated with this laboratory	X				1



Laboratory Project Na		Accutest Gulf Coast  Quarterly Well Sampling, Parker	LRC Date:	9/6/2 TC15			
							_
Reviewer		Anita Patel	Prep Batch Number(s):		1, VC1		
#1	A <sup>2</sup>	DESCRIPTION		YESIN	IO NA	NK.	ER#
S1	OI	Initial calibration (ICAL)			_	-	
		Were response factors and/or relativ	re response factors for each analyte within QC	X			
	1	Were percent RSDs or correlation co	pefficient criteria met?	X	-		
	1		mended in the method used for all analytes?	X			
	1		he lowest and highest standard used to			-	
		calculate the curve?		X			
		Are ICAL data available for all instrur	ments used?	X	100		
		Has the initial calibration curve been	verified using an appropriate second source				
		standard?		X			
S2	OI	Initial and continuing calibration v	verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the metho	od-required frequency?	X			
		Were percent differences for each ar	nalyte within the method-required QC limits?	X	300		11
		Was the ICAL curve verified for each	n analyte?	X	- 1		
		Was the absolute value of the analyt	te concentration in the inorganic CCB <mdl?< td=""><td></td><td>X</td><td>=1</td><td>-</td></mdl?<>		X	=1	-
S3	0	Mass spectral tuning					
		Was the appropriate compound for the	X		112.0		
		Were ion abundance data within the	method-required QC limits?	X			
\$4	0	Internal standards (IS)			En S		
EC	100	Were IS area counts and retention til	X		-1		
S5	OI	Raw data (NELAC Section 5.5.10)					
		Were the raw data (for example, chro	x		171		
		analyst?			- 1		
-		Were data associated with manual in	ntegrations flagged on the raw data?	X		$t \equiv 1$	-
\$6	0	Dual column confirmation		7.12			
-		Did dual column confirmation results		X			
S7	0	Tentatively identified compounds				-	
		If TICs were requested, were the ma-	ss spectra and TIC data subject to appropriate		X		
S8	- 1	Interference Check Sample (ICS)	recults		-	-	
		Were percent recoveries within meth			X		
S9	1		ikes, and method of standard additions		1 ^		-
			s, and the linearity within the QC limits	- 1	11.00	-	
		specified in the method?	, and the initiality intinitials are initial	:40	X		
S10	OI	Method detection limit (MDL) stud	lies				-
		Was a MDL study performed for eac		X	1		1
		Is the MDL either adjusted or suppor		X			2
S11	OI	Proficiency test reports		-			1
		Was the laboratory's performance ac	cceptable on the applicable proficiency tests or	x			
		evaluation studies?		^			
S12	OI	Standards documentation		1	200		
			es NIST-traceable or obtained from other	x			
		appropriate source?		^			
S13	OI	Compound/analyte identification p		1			
		Are the procedures for compound/an		Х			
S14	OI	Demonstration of analyst compete		1	1	7-5	-
		Was DOC conducted consistent with		X		/ 3	2 = 1
	- 2.	Is documentation of the analyst's cor		X	1.5	0 × 6	
S15	OI		tion for methods (NELAC Chapter 5)				-
			the data documentated, verified, and	x			7
		validated, where applicable?		1.52			
S16	OI	Laboratory standard operating pro					



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	9/6/2012
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC15481
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS181, VC1174
ER#	Descript	ion		
1		ting purposes, the MQL is defined in the se SDL is defined in the report as the MI		QL/RL is reported in the method
2		oratory does not perform DCS analysis f ave values in the Texas TRRP PCL table		omponents reported are not listed of
3		ting purposes, the method blank repres in the laboratory data package.	ents the unadjusted MQL. The DCS i	s on file in the laboratory and is no
4		ratory is NELAC-accredited under the Transcript associated with this laboratory data pac		

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



~~	1 × ×	**		
GC	MS	Vo	lat1	PS

QC Data Summaries

#### Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



### Method Blank Summary

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC1174-MB	C0025498	4.D1	08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

TC15481-1

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.34	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l
108-88-3	Toluene	ND	1.0	0.33	ug/1
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	101%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

Page 1 of 1

Method: SW846 8260B

### Blank Spike Summary

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
VC1174-BS	C00254982	2.D1	08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.0	96	76-118
100-41-4	Ethylbenzene	25	24.3	97	75-112
108-88-3	Toluene	25	21.6	86	77-114
1330-20-7	Xylene (total)	75	72.5	97	75-111
CAS No.	Surrogate Recoveries	BSP	Lin	mits	
1868-53-7	Dibromofluoromethane	102%	79-	-122%	
17060-07-0	1,2-Dichloroethane-D4	103%	75	-121%	
2037-26-5	Toluene-D8	95%	87-	-119%	
460-00-4	4-Bromofluorobenzene	101%	80-	-133%	



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15249-4MS	C00254986	6.D1	08/31/12	CF	n/a	n/a	VC1174
TC15249-4MSD	C0025498	7.D1	08/31/12	CF	n/a	n/a	VC1174
TC15249-4	C00254985	5.D1	08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

TC15481-1

2037-26-5 Toluene-D8

460-00-4 4-Bromofluorobenzene

		TC1524	49-4	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l	Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	ND		25	22.3	89	22.4	90	0	68-119/12
100-41-4	Ethylbenzene	0.44	J	25	23.5	92	23.5	92	0	71-117/12
108-88-3	Toluene	0.37	J	25	23.8	94	21.9	86	8	73-119/13
1330-20-7	Xylene (total)	4.5		75	75.5	95	76.6	96	1	74-119/13
CAS No.	Surrogate Recoveries	MS		MSD	T	C15249-4	Limits			
1868-53-7	Dibromofluoromethane	105%		101%	10	0%	72-122	%		
17060-07-0	1.2-Dichloroethane-D4	100%		99%	10	7%	68-1249	%		

97%

103%

106%

100%

80-119%

72-126%

103%

90%



<sup>\* =</sup> Outside of Control Limits.



QC Data Summ	aries	

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method: RSKSOP-147/175

## 7

#### Method Blank Summary

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample GSS181-MB	<b>File ID</b> SS003712.D	<b>DF</b> 1	<b>Analyzed</b> 09/04/12	By LT	Prep Date n/a	Prep Batch n/a	Analytical Batch GSS181

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Method: RSKSOP-147/175

## Blank Spike Summary Job Number: TC15481

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	<b>Analyzed</b> 09/04/12	By	Prep Date	Prep Batch	Analytical Batch
GSS181-BS	SS003710.D	1		LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP	Limits
	- Compound	-6/-	-6/-	70	Limits
74-82-8	Methane	21.5	21.7	101	68-139
74-85-1	Ethene	57.4	44.7	78	52-145
74-84-0	Ethane	43.3	31.5	73	68-131
74-98-6	Propane	60.6	47.2	78	69-131
75-28-5	Isobutane	72.5	60.0	83	72-131
106-97-8	Butane	76.6	63.6	83	66-128



<sup>\* =</sup> Outside of Control Limits.

### Matrix Spike Summary Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15494-1MS	SS003719.D	1	09/04/12	LT	n/a	n/a	GSS181
TC15494-1	SS003718.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

		TC15494-1	Spike	MS	MS		
CAS No.	Compound	ug/l Q	ug/I	ug/l	%	Limits	
74-82-8	Methane	0.50 U	21.5	21.4	99	68-139	
74-85-1	Ethene	1.0 U	57.4	60.9	106	52-145	
74-84-0	Ethane	1.0 U	43.3	43.8	101	68-131	
74-98-6	Propane	1.5 U	60.6	63.6	105	69-131	
75-28-5	Isobutane	1.5 U	72.5	79.7	110	72-131	
106-97-8	Butane	1.5 U	76.6	83.9	110	66-128	



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

## Duplicate Summary Job Number: TC15481

PESTXST EarthCon Consultants Account:

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15494-2DUP	SS003722.D	1	09/04/12	LT	n/a	n/a	GSS181
TC15494-2	SS003721.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

TC15481-1

		TC15494-2	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	0.50 U	ND		nc	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1,5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33



<sup>\* =</sup> Outside of Control Limits.



08/31/12



### **Technical Report for**

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW6-THO

Accutest Job Number: TC14972

Sampling Date: 08/17/12

### Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

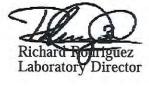
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



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### Sample Summary

EarthCon Consultants

Job No:

TC14972

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW6-THO

Sample	Collected			Matrix	Client
Number	Date	Time By	Received	Code Type	Sample ID
TC14972-1	08/17/12	15:20	08/21/12	AQ Ground Water	WW6-THO-081712





### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14972

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:59:49 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14972. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VZ3732

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



## Summary of Hits Job Number: TC14972

EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Collected: 08/17/12

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14972-1	WW6-THO-08171	2				
Methane Ethane		0.771 0.0261	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Page 1 of 1







Client Sample ID: WW6-THO-081712

Lab Sample ID: TC14972-1 Date Sampled: 08/17/12 Matrix: AQ - Ground Water Date Received: 08/21/12 Method: SW846 8260B Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed Prep Date **Analytical Batch** By Prep Batch Run #1 Z028328.D 1 08/24/12 AK VZ3732 n/a n/a Run #2

Purge Volume Run #1 5.0 ml

Run #2

### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	100%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	89%		75-121%		
2037-26-5	Toluene-D8	104%		87-119%		
460-00-4	4-Bromofluorobenzene	111%		80-133%		

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound







### Report of Analysis

Client Sample ID: WW6-THO-081712

 Lab Sample ID:
 TC14972-1
 Date Sampled:
 08/17/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

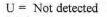
Project: Quarterly Well Sampling, Parker County, Texas

1 - 7 -	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003643.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003650.D	10	08/27/12	LT	n/a	n/a	GSS178

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.771 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/I	
74-84-0	Ethane	0.0261	0.0010	0.00050	mg/I	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

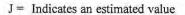
(a) Result is from Run# 2



SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range



B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





LRC Form

Custody Doc	cuments ar	nd Other F	Forms
Includes the fo	llowing who	ere applicab	ole:



	Co. Turnella della
MACCU	TEST

### CHAIN OF CUSTODY

PAGE \_\_\_ OF \_\_\_

Laboratories			10165 Has	rwin Dr. S	= 150 Ho	aston, TX	7/036	5				FED-E	X Tracking	6		Bottl	e Order Contri	ol #		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				3-271-470		713-271-						Accute	st Quate #			Accu	test Job 9	VI	46	17
Client / Reporting Information	1965年		Project	Informa			4 (5)	植茶		造級	N. Carlot	1	_	Ra	ueste	d An	alyse:		17	Matrix Codes
Company Name	Project Name:									210.7				- "		1	T T		T	Matrix Codes
EarthCon Consultants. Inc.	Second Qua	rterly Well Sam	milno Parke	r Count	v Tova			,					10,							
Street Address	Street	nony real call	pang, runc	-	STATE OF	William Co.	100 PM	es entre	SAUSTER!		NACOS OF	5	tha .				1 1			DW - Drinking Water GW - Ground Water
4800 Sugar Grove Blvd., Suite 390				Billing I	nformatic	n ( If diff	erent f	from Re	port to)				ž.		1 1		1 1			WW - Water
City State Zip	City		State	Compan	y Name							1	ane			10			1165	SW - Surface Water SO - Soil
Stafford TX 77477 Project Contact E-mail	Project#			Street At	trienes							4	P P		1	1	1 1			SL-Sludge SED-Sedment
Gabriela Floreslovo	, tolonia			Judani								1	100		1 1	1	1 1	- 1	1	01-01
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281-201-3513													급등					- 1	10.0	SOL - Other Solid WP - Wipe
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J. Bruskewitz 803-0145		Cotte	alta a				-					8	출출							
		Cons	Ciba			11	FIT	ber of pri	merved B	ottles	TwI	8	ane,				1 1			
Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	NaOH HG	PANS PANS	2504 ONE	DI Wate	TSP	HE KON	BTEX 8260B	Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175						7	A TOTAL PARTY
1 WWG-THO-84712				5,00000	- Common	<b></b>	7 2	x 2	0 3	F 2	- B	-				_				LAB USE ONLY
\ MMG-1110-88-117	8-17-12	1520	JO/JM	W	6	X	44				$\perp$	X	x							
			12.5					25/41		-7								4		
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2-4		1.7 0	(0.000)														1		The same	
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5		5				1	Cost	nd. 299				Intact Not inta		Preserved who	e applicable			On Ice	Cooler	Temp.

TC14972: Chain of Custody Page 1 of 3





### Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 8/21/2	012		Delivery N	/lethod:		FedEx	Airbill #'s: 795765167616				
lo. Coolers: 1	Therm II	: IRGUN5;					Temp Adjustment Factor:	-0.4;			
cooler Temps (Initial/Adjusted	i): #1: (2	.8/2.4);									
	or N				or N	Sample Inte	grity - Documentation	Y	or	N	
. Custody Seals Present:		3. COC Pr		~		1. Sample lab	els present on bottles:	$\checkmark$			
2. Custody Seals Intact:		4. Smpl Date	s/Time OK	~		2. Container I	abeling complete:	~			
cooler Temperature	Y or	N				3. Sample co	ntainer label / COC agree:	$\checkmark$			
1. Temp criteria achieved:						Sample Inte	grity - Condition	Y	or	N	
Cooler temp verification:						1, Sample red		V			
3. Cooler media:	Ice (E	Bag)				Commence of the commence of th	ers accounted for:	<b>V</b>		П	
Quality Control Preservation	Y or	N N/A		WTB	STB	3. Condition of		121	Intact	_	
1. Trip Blank present / cooler:	<b>V</b>			✓		Sample Inte	grity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						Part of the same of the same	equested is clear:				
3. Samples preserved properly:	$\mathbf{\nabla}$					2. Bottles rec	eived for unspecified tests			~	
4. VOCs headspace free;						3. Sufficient	volume recvd for analysis;	<b>Z</b>			
						4. Compositi	ng instructions clear:				~
						5. Filtering in	structions clear:	П			V

TC14972: Chain of Custody Page 2 of 3







### Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
7	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14972: Chain of Custody

Page 3 of 3



# Appendix A Laboratory Data Package Cover Page TC14972 This data package consists of

F	This sig	nature page, the laboratory revie	w checklist, and the following reportable data:
	R1	Field chain-of-custody docum	nentation;
Ţ	R2	Sample identification cross-re	eference;
Į.	R3	Test reports (analytical data s	sheets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
Q.	R4	Surrogate recovery data inclu	iding:
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
0.0	R5	Test reports/summary forms	for blank samples;
	R6	Test reports/summary forms	for laboratory control samples (LCSs) including:
,-		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
	R7	Test reports for project matrix	spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
ū	R8	Laboratory analytical duplicat	e (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
Ţ.	R9	List of method quantitation lin	nits (MQLs) and detectability check sample results for each analyte for each
ū	R10	Other problems or anomalies	
			d (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and C accreditation under the Texas Laboratory Accreditation Program.
	O-1	de l'impresse estate de la facilita de la company	
kas La	boratory A	ccreditation Program for all the m	te of this laboratory data package. This laboratory is NELAC accredited under the tethods, analytes, and matrices reported in this data package except as noted in eviewed by the laboratory and is complete and technically compliant with the

Rel Tex requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly

Check, if applicable	This laboratory meets an	exception under 30 TAC&25.6 and was last in	spection by
II .	[X]TCEQ or [] noted in the Exception Re	on April 2011. Any findings affecting the dat eports herein. The official signing the cover pa leasing this data package and is by signature	a in this laboratory data package are ge of the report in which these data are
QA Manager			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	Hand	Laboratory Director	8/29/2012



		Accutest Gulf Coast	CHECKLIST: REPORTABLE		9/20	112		
-uso, uto. )	11001101	Quarterly Well Sampling, Parker		-				
roject Na	me:	County, Texas	Laboratory Project Number:	TC	149	72		
Reviewer		Anita Patel	Prep Batch Number(s):	-	_	VZ3	732	_
#1	A <sup>2</sup>	DESCRIPTION	Trop Batar Hamberton.			NA <sup>3</sup>		FR
R1	OI	CHAIN-OF-CUSTODY (C-O-C):		1.20	1,10	141	1414	
-141	- 0.		andard conditions of sample acceptability	100				
		upon receipt?	and a serial series of series as seen as may	X			11	
			anditions described in an exception report?	X				-
R2	OI	Sample and quality control (QC) id		1			-	-
			s-referenced to the laboratory ID numbers?	X				
			eferenced to the corresponding QC data?	X	-			-
Do	OI		eletericed to the corresponding QC data?	^				_
R3	UI.	Test reports Were samples prepared and analyze	d within holding times?	V		-	-	-
			all other raw values bracketed by calibration	X	-			
		standards?	all other raw values bracketed by calibration	X	111			
		Were calculations checked by a peer	or cupanicar?	X	-	-	-	-
		Were all analyte identifications check		X	_		-	$\vdash$
		Were sample detection limits reported		X			-	-
			samples reported on a dry weight basis?	^	-	Х		
		Were % moisture (or solids) reported			541	X		
			platile analysis extracted with methanol per	1		126		
		SW846 Method 5035?	name analysis should and married per		JH)	X		
		If required for the project, are TIC's re	eported?			Х		
R4	0	Surrogate recovery data			-	7.		
		Were surrogates added prior to extra	ction?	Х			- 1	
			all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for bl				100		50
		Were appropriate type(s) of blanks ar		Х				
		Were blanks analyzed at the appropr		X				
		Were method blanks taken through the		1				
		preparation and, if applicable, cleanu	p procedures?	X			- 4	
	200	Were blank concentrations <mql?< td=""><td></td><td>X</td><td></td><td></td><td></td><td></td></mql?<>		X				
R6	OI	Laboratory control samples (LCS):		1		-		
		Were all COCs included in the LCS?		X				
		Was each LCS taken through the ent	ire analytical procedure, including prep and	х				
		cleanup steps?		^				
		Were LCSs analyzed at required freq		X				
		Were LCS (and LCSD, if applicable)	%Rs within the laboratory QC limits?	Х				
		Does the detectablility check sample	data document the laboratory's capability to	X	70		7.1	-
		detect the COCs at the MDL used to		_^		p 14		5
		Was the LCSD RPD within QC limits		F		X		
R7	OI	Matrix spike (MS) and matrix spike						
		Were the project/method specified an		X				
		Were MS/MSD analyzed at the appro		Х		151		
		Were MS (and MSD, if applicable) %			Х	TE	11 1	4
		Were the MS/MSD RPDs within labor	ratory QC limits?	X				
R8	OI	Analytical duplicate data		1				
		Were appropriate analytical duplicate		Х				
		Were analytical duplicates analyzed a	at the appropriate frequency?	X		10		
		Were RPDs or relative standard devia	ations within the laboratory QC limits?	X	-	(i = (		
R9	01	Method quantitation limits (MQLs):		100				
			e included in the laboratory data package?	X				
			entration of the lowest non-zero calibration	Х				
		Are unadjusted MQLs and DCSs incl	uded in the laboratory data package?		Х			2
R10	OI	Other problems/anomalies			-	Torre	- 5	
			ecial conditions noted in this LRC and ER?	X		IE 0		
			ogy used to lower the SDL to minimize the	X		ijΞŅ	VET.	
			nder the Texas Laboratory Accreditation	P.E.I				
			nd methods associated with this laboratory	X				3
		data package?						

Laboratory Name: Project Name:		Accutest Gulf Coast	LRC Date:	8/29/2012				
		Quarterly Well Sampling, Parker			4972		_	
Reviewer		Anita Patel	Prep Batch Number(s):		78, VZ3			
#1	A <sup>2</sup>	DESCRIPTION		YES	NO NA3	NR⁴ I	ER#	
S1	OI	Initial calibration (ICAL)						
			e response factors for each analyte within QC	x				
		limits?		9.5				
		Were percent RSDs or correlation co		X				
		Was the number of standards recom	mended in the method used for all analytes?	X				
		Were all points generated between the	he lowest and highest standard used to	x				
		calculate the curve?	^					
		Are ICAL data available for all instrur		X		3		
		Has the initial calibration curve been	verified using an appropriate second source	x				
	112	standard?	Secretary and the second second	X				
S2	OI	Initial and continuing calibration v	erification (ICCV AND CCV) and continuing		90/101	1		
		Was the CCV analyzed at the metho	d-required frequency?	X				
			nalyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each		X	- 12-7		_	
	140		e concentration in the inorganic CCB <mdl?< td=""><td></td><td>X</td><td></td><td></td></mdl?<>		X			
S3	0	Mass spectral tuning	and the state of t	100	- 1			
		Was the appropriate compound for ti	ΧI			_		
		Were ion abundance data within the		X	-		-	
S4	0	Internal standards (IS)	method-required QO minus:	^	-		_	
- 04	-		mes within the method-required QC limits?	VI	-		-	
S5	Oi	Raw data (NELAC Section 5.5.10)	ries within the method-required QC limits?	X			_	
33	OI.				_		_	
			omatograms, spectral data) reviewed by an	x				
		analyst?		1 PA 1				
	-	Were data associated with manual in	tegrations flagged on the raw data?	X				
S6	0	Dual column confirmation		Farmer	-	-	_	
-		Did dual column confirmation results			X		_	
S7	0	Tentatively identified compounds		-		200		
			ss spectra and TIC data subject to appropriate		x	17.19		
		checks?			^			
S8		Interference Check Sample (ICS) r			450			
		Were percent recoveries within meth		#1 ed	X			
S9			kes, and method of standard additions					
		Were percent differences, recoveries	, and the linearity within the QC limits		V			
		specified in the method?			X			
\$10	01	Method detection limit (MDL) stud	ies			-		
		Was a MDL study performed for each	n reported analyte?	X	11 ti C li			
		Is the MDL either adjusted or suppor	ted by the analysis of DCSs?	X	31	100	5	
S11	OI	Proficiency test reports		11	500	-	S.	
			ceptable on the applicable proficiency tests or	A			_	
		evaluation studies?		X				
S12	OI	Standards documentation			-	-		
			s NIST-traceable or obtained from other	-			_	
		appropriate source?	The state of the s	X				
S13	OI	Compound/analyte identification p	rocedures					
		Are the procedures for compound/an		X	1			
S14	OI	Demonstration of analyst competer		- 1	-	-	-	
V	- 0.	Was DOC conducted consistent with		Х	1	1.34		
		Is documentation of the analyst's con		X	-	-	-	
S15	OI			^				
010	OI.		tion for methods (NELAC Chapter 5)		7	-	-	
			the data documentated, verified, and	X				
010	01	validated, where applicable?		100				
S16	OI	Laboratory standard operating pro	ocedures (SUPS)		-	200	-0	
		Are laboratory SOPs current and on t	nie for each method performed?	X				



e: Anita Patel	Sampling, Parker	LRC Date: Laboratory Project Number:	8/29/2012 TC14972
			1014312
		Prep Batch Number(s):	GSS178, VZ3732
cription			
k. The SDL is defined in	the report as the MD	DL.	3 - 14 - 14 - 15 - 15 - 15 - 15 - 15 - 15
	The second secon	end the unadjusted was. The Do	b is on the in the laboratory and is not
nomalies are discussed i	n the case narrative		
			components reported are not listed o
1	The SDL is defined in eporting purposes, the noded in the laboratory dat laboratory is NELAC-accods associated with this nomalies are discussed in Laboratory does not perfusion.	c. The SDL is defined in the report as the MD eporting purposes, the method blank represided in the laboratory data package. It is not support to the Toda of t	eporting purposes, the MQL is defined in the report as the RL. The unadjusted k. The SDL is defined in the report as the MDL. eporting purposes, the method blank represents the unadjusted MQL. The DC ded in the laboratory data package. laboratory is NELAC-accredited under the Texas Laboratory Accreditation Prog ods associated with this laboratory data package for analytes that are listed in tomalles are discussed in the case narrative. Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The ot have values in the Texas TRRP PCL tables.

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method: SW846 8260B

## Method Blank Summary Job Number: TC14972

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/1
108-88-3	Toluene	ND	1.0	0.26	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	106%	79-122%
17060-07-0	1,2-Dichloroethane-D4	98%	75-121%
2037-26-5	Toluene-D8	106%	87-119%
460-00-4	4-Bromofluorobenzene	114%	80-133%

Method: SW846 8260B

## Blank Spike Summary Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

		Spike	BSP	BSP	
CAS No.	Compound	ug/l	ug/l	%	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111
CAS No.	Surrogate Recoveries	BSP	Liı	nits	
1868-53-7	Dibromofluoromethane	99%	79-	-122%	
17060-07-0	1,2-Dichloroethane-D4	90%	75-	121%	
2037-26-5	Toluene-D8	103%	87-	119%	
460-00-4	4-Bromofluorobenzene	109%	80-	133%	



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

		TC14970	-1 Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l	Q ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.1	99	72.6	97	2	75-111/12
CAS No.	Surrogate Recoveries	MS	MSD	T	C14970-1	Limits			

CHO III.	Sali ogate recevenes	IVIS	141515	10142/0-1	Limits
1868-53-7	Dibromofluoromethane	107%	106%	104%	79-122%
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96%	75-121%
2037-26-5	Toluene-D8	107%	107%	107%	87-119%
460-00-4	4-Bromofluorobenzene	113%	113%	113%	80-133%



<sup>\* =</sup> Outside of Control Limits.



QC Data Summaries	

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: RSKSOP-147/175

## Method Blank Summary Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 08/27/12	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1		LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l

Method: RSKSOP-147/175

### Blank Spike Summary Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130



<sup>\* =</sup> Outside of Control Limits.

### Matrix Spike Summary Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

		TC14970-1	Spike	MS	MS	
CAS No.	Compound	ug/I Q	ug/l	ug/I	%	Limits
74-82-8	Methane	914 b	21.5	600	-337* a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

<sup>(</sup>a) Outside control limits due to high level in sample relative to spike amount.



<sup>(</sup>b) Result is from Run #2.

<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

### **Duplicate Summary** Job Number: TC14972

Account:

PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14972-1

		TC14970-1	DUP				
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits	
74-82-8	Methane	914 a	869	Е	26	30	
74-85-1	Ethene	1.0 U	ND		nc	30	
74-84-0	Ethane	42.3	57.4		30	30	
74-98-6	Propane	1.5 U	ND		nc	30	
75-28-5	Isobutane	1.5 U	ND		nc	30	
106-97-8	Butane	1.5 U	ND		nc	30	

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



### ANALYSIS REPORT

Lab #: 261140 Job #: 19036

Sample Name/Number: WW6-THO-081712 Company: Oil Tracers, LLC

Date Sampled: 8/17/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	δ <sup>13</sup> C ‰	δD ‰	δ <sup>18</sup> Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.38			
Oxygen	0.11			
Nitrogen	87.01			
Carbon Dioxide	0.32			
Methane	11.05	-42.07	-127.0	
Ethane	0.131	-16.1		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	0.0009			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	0.0005			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 114

Specific gravity, calculated: 0.929

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.78

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS Sample ID on bottle listed as WW16

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



Reissue #1 09/24/12



### Technical Report for

### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW01-WEL

Accutest Job Number: TC14973

Sampling Date: 08/17/12

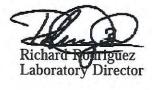
### Report to:

gfloreslovo@earthcon.com djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

Total number of pages in report: 26



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

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10165 Harwin Drive Houston, TX 77036 Tel: 713-271-4700

www.accutest.com

September 24, 2012

EarthCon Consultants, Inc. 4800 Sugar Grove Blvd. Suite 390 Houston, TX 77477

ATTN: Gabriela Floreslovo

RE: Accutest job TC14973 Reissue

Dear Ms. Floreslovo:

This report TC14973 has been revised to correct sample identification from WWW01-WEL-081712 to WW01-WEL-081712.

We apologize for any inconvenience this may have caused. Please feel free to contact me if I can be of further assistance.

Sincerely,

Bernadette Fini

Bernadette Fini Accutest Laboratories, GC



### Sections:

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2



4







### Sample Summary

EarthCon Consultants

Job No:

TC14973

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW01-WEL

Sample Collec				Matrix	Client
Number	Date	Time By	Received	Code Type	Sample ID
TC14973-1	08/17/12	08-58	08/21/12	AO Ground Water	WW01 WEL 081712





### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14973

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 7:01:03 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14973. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VZ3732

- = All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



## Summary of Hits Job Number: TC14973

EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas 08/17/12 Project:

Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14973-1	WW01-WEL-0817	12				
Methane		0.550	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0416	0.0010	0.00050	mg/l	RSKSOP-147/175



Page 1 of 1





Deport of Analysis	
Report of Analysis	



Client Sample ID: WW01-WEL-081712

 Lab Sample ID:
 TC14973-1
 Date Sampled:
 08/17/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

0.00	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	Z028331.D	1	08/24/12	AK	n/a	n/a	VZ3732
Run #2							

Report of Analysis

#### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	105%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	93%		75-121%		
2037-26-5	Toluene-D8	105%		87-119%		
460-00-4	4-Bromofluorobenzene	115%		80-133%		

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ \ Indicates \ analyte \ found \ in \ associated \ method \ blank$ 

N = Indicates presumptive evidence of a compound



-

Client Sample ID: WW01-WEL-081712

Lab Sample ID: TC14973-1 Date Sampled: 08/17/12 Matrix: AQ - Ground Water Date Received: 08/21/12 Method: RSKSOP-147/175 Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

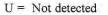
	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003647.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003648.D	10	08/27/12	LT	n/a	n/a	GSS178

Report of Analysis

### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.550 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0416	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

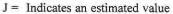
(a) Result is from Run# 2



SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range



B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound





N	Misc. Forms
Cı	ustody Documents and Other Forms
_	
	cludes the following where applicable:  Chain of Custody
	LRC Form



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		1	17 .	0 . 3	1.1		4 4

### CHAIN OF CUSTODY

PAGE \_\_\_ OF \_\_\_

Laboratories			10165 Ha	rwin Dr. S	tc 150 Ho	uston, T	C 7703	6			FED-E	X Tracking	9.0			Bottle On	ier Control #			
		240	TEL 7	3-271-470	0 FAX:	713-271	-4770				Accura	est Quota (				Accutest.	Job#	71	40	72
Client / Reporting Information		<b>建設。</b>	Project	Informa	ition	100	Walk.	10	12 April	## 19	2		Re	ques	sted	Anal	vses	101	-	Matrix Codes
Company Name	Project Name:											( - T			T	T	7	110-3		Middlix Couds
EarthCon Consultants, Inc.	Second Quar	terly Well Sam	pling, Park	er Count	y, Texa	5						ane,								
4800 Sugar Grove Blvd., Suite 390	Street					_	-			がなると	XX.	fet.	K NI	1		1 1				DW - Drinking Wate GW - Ground Wate
City State Zip	City		State	Compan	nformatic	on ( If diff	férent f	from Re	port to)	_	4	9.			1		1178			WW - Water SW - Surface Water
Stafford TX 77477			2-0		,							Ita	k II		1	1 1				SO - Soil SL- Studge
Project Contact E-mail	Project#			Street A	dress	_		_		_	-	ē				1 1			N. U	SED-Sediment
Gabriela Floreslovo												9,18								OI - OII LIQ - Other Liquid
Phone # Fax # 281-201-3513	Client Purchase (	Order#		City				State		Zip	7	then 175								AIR - Air SOL - Other Solid
Sampler(s) Name(s) Phone #	Project Manager			Attention	ç						1	RSK-								WP - Wipe FB-Field Stank
JULIEHELFRICH (512) 632-5380		Coller	ction				Numi	ber of on	served Bott	0.5	260B	Etha e		1			Yh!	1 3		
Amazinat Sample # Field ID / Point of Collection		1			# of	- E	#II		h	T I at I	BTEX 8260B	Butane, Ethane, Ethene, Isobutane, Melhane, Propane by RSK-175		ı						
WW01-WEL-081712	08/17/1Z	Time	JLH	W	bottles	2 Z	2 至	Z 8	NE DI	2 3	-	0 d								LAB USE ONLY
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Turnaround Time ( Business days)  X Stendard		Production of the same	1	ではいる。		Data	Jelive	erable l	nformatio	n	内心病		Control of	地可能够	Comi	ments / S	pecial Inst	ructions	52.232	
Standard     □ 5 Day RUSH	Approved By (Accus	est PM): / Date:			Commerc				XT											
A Day RUSH					Commerc			1)		DD Forms	it									
3 Day RUSH	-				ULTI (L					ther	_	- 1								
2 Day RUSH					commerci		1					1		_						
1 Day EMERGENCY							nercial	"A" = R	esults Only	,										1
Emergency & Rush T/A data available V/A Leblink						Com	Tierclat	"B" = R	esults + Q	C Summar	,				-				_	
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Relinquished by: Date Tool:		Received By:	<u> </u>		$\overline{}$	>	4 Cust	ody Seal					Preserved who	re applica	ible	4	Dn I		Cooler	Term.
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TC14973: Chain of Custody Page 1 of 3



2



## Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 8/21/201  No. Coolers: 1 T  Cooler Temps (Initial/Adjusted):	herm ID:	IRGUN5;	Delivery I	weulou		FedEx	Airbill #'s: 795765167616				
								-0 4			
Cooler Temps (Initial/Adjusted):	<u>#1: (2.8</u>	8/2.4);					Temp Adjustment Factor:	0.1,			
Cooler Security Y or	r N				or N	Sample Inte	grity - Documentation	Y	or	N	
Custody Seals Present:		3. COC PI		V		1. Sample lab	els present on bottles:	V			
2. Custody Seals Intact:   ✓		I. Smpl Date	s/Time OK	~		2. Container I	abeling complete:	V			
Cooler Temperature	Y or I	N_				3. Sample con	ntainer label / COC agree:	$\overline{\mathbf{v}}$			
	☑ [					Sample Inte	grity - Condition	Y	or	N	
Cooler temp verification:	- Nav					1. Sample red	evd within HT:	V			
3. Cooler media:	ice (Ba	ig)				2. All contains	ers accounted for:	V			
Quality Control Preservation	Y or	N N/A		WTB	STB	3. Condition of	f sample:		Intac	t	
						Sample Inte	grity - Instructions	Y	ог	N	N/A
2. Trip Blank listed on COC:		<b>2</b>				1. Analysis re	equested is clear:	V			
3. Samples preserved properly:	✓ [					2. Bottles red	eived for unspecified tests			<b>V</b>	
4. VOCs headspace free:	✓ [					3. Sufficient	olume recvd for analysis:	V			
						4. Composition	ng instructions clear:				V
						5. Filtering in	structions clear:				V

TC14973: Chain of Custody

Page 2 of 3







## Sample Receipt Log

 Job #:
 TC13879
 Date / Time Received:
 8/2/2012 9:50:00 AM
 Initials:
 BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1.1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14973: Chain of Custody

Page 2 of 2

Page 3 of 3





# Appendix A Laboratory Data Package Cover Page TC14973 This data package consists of

U	This sig	nature page, the laboratory review	ew checklist, and the following reportable data:
J	R1	Field chain-of-custody document	mentation;
D.	R2	Sample identification cross-	reference;
Q.	R3	Test reports (analytical data	sheets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
Q.	R4	Surrogate recovery data incl	uding:
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits,
10.	R5	Test reports/summary forms	for blank samples;
D.	R6	Test reports/summary forms	for laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
D.	R7	Test reports for project matri	x spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
Q.	R8	Laboratory analytical duplica	ate (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
D.	R9	List of method quantitation li	mits (MQLs) and detectability check sample results for each analyte for each
Ū	R10	Other problems or anomalies	
			ed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and
thod t	for which th	ne laboratory does not hold NEL/	AC accreditation under the Texas Laboratory Accreditation Program.
lease	Statemen	nt: I am responsible for the relea	se of this laboratory data package. This laboratory is NELAC accredited under
kas La	aboratory A	ccreditation Program for all the r	methods, analytes, and matrices reported in this data package except as noted in
Part of the	William Harris	And the second s	2007 M

Rel the the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly

Check, if applicable	This laboratory meets an	exception under 30 TAC&25.6 and was last in	spection by
[]	noted in the Exception Re	on April 2011. Any findings affecting the data ports herein. The official signing the cover pa leasing this data package and is by signature	ge of the report in which these data are
QA Manager			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	There	Laboratory Director	8/29/2012
	U		

aboratory		Accutest Gulf Coast	CHECKLIST: REPORTABLE  LRC Date:		9/20	12	_	_
aboratory	rvario.	Quarterly Well Sampling, Parker	ENO Date.	0,2	.0/20	12		
roject Na	me:	County, Texas	Laboratory Project Number:	TO	149	73		
Reviewer	Name:	Anita Patel	Prep Batch Number(s):			VZ37	32	
#1	A <sup>2</sup>	DESCRIPTION				NA		FR
R1	OI	CHAIN-OF-CUSTODY (C-O-C):		1,20	11.0	7.2.5.		
117			andard conditions of sample acceptability	x				
		upon receipt?	anditions discoulded in an expenditure records	1.22	_			
R2	OI	Sample and quality control (QC) id-	anditions described in an exception report?	X		-		
102	- Oi		entification e-referenced to the laboratory ID numbers?	X	_			-
	1 - 2		eferenced to the corresponding QC data?	x				
R3	OI	Test reports	circineed to the corresponding QO data:	^	_			
110	O.	Were samples prepared and analyze	d within holding times?	Х				
			all other raw values bracketed by calibration					
		standards?	And and the first transfer and	Х				
		Were calculations checked by a peer	or supervisor?	X	-11			
		Were all analyte identifications check	ed by a peer or supervisor?	X	71			
		Were sample detection limits reported		X		1		
			samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported			Į, i	X		
			latile analysis extracted with methanol per			X	1	
		SW846 Method 5035?  If required for the project, are TIC's re	nadad?			1,000		_
R4	0	Surrogate recovery data	ported?			X		_
114	-	Were surrogates added prior to extract	rtion?	X				_
	11.00		all samples within the laboratory QC limits?	x				-
R5	OI	Test reports/summary forms for bla						
1.00		Were appropriate type(s) of blanks ar		Х				_
		Were blanks analyzed at the appropri		X				
		Were method blanks taken through the		200				
		preparation and, if applicable, cleanup		X				
	/	Were blank concentrations <mql?< td=""><td></td><td>X</td><td></td><td></td><td></td><td></td></mql?<>		X				
R6	OI	Laboratory control samples (LCS):						
		Were all COCs included in the LCS?		X		i i i	= (	
			ire analytical procedure, including prep and	X				
		cleanup steps?		1.22				
		Were LCSs analyzed at required freq		X	- 1			
		Were LCS (and LCSD, if applicable)		X				_
		detect the COCs at the MDL used to	data document the laboratory's capability to	X				5
	10.00	Was the LCSD RPD within QC limits'			-	Х	-	
R7	OI	Matrix spike (MS) and matrix spike				^		
	- 01	Were the project/method specified an		Х				_
		Were MS/MSD analyzed at the appro		X				
		Were MS (and MSD, if applicable) %		-	Х			- 4
		Were the MS/MSD RPDs within labor	ratory QC limits?	X		1 1		
R8	OI	Analytical duplicate data		1			_	
		Were appropriate analytical duplicate	s analyzed for each matrix?	Х		E [31]		
		Were analytical duplicates analyzed a	at the appropriate frequency?	X		F 3 1		
	-	Were RPDs or relative standard devia	ations within the laboratory QC limits?	X	-	p 1		
R9	OI	Method quantitation limits (MQLs):						
			e included in the laboratory data package?	Х		31		
			entration of the lowest non-zero calibration	Х				
212		Are unadjusted MQLs and DCSs inclu	uded in the laboratory data package?		Х	100		2
R10	OI	Other problems/anomalies				2	-	
			ecial conditions noted in this LRC and ER?	X		44.1		
			ogy used to lower the SDL to minimize the	Х				
		Is the laboratory NELAC-accredited up	nder the Texas Laboratory Accreditation nd methods associated with this laboratory	×				
							- 1	- 3



Laboratory Name: Project Name:		Accutest Gulf Coast	_	9/20				
		Quarterly Well Sampling, Parker	Laboratory Project Number:	TC	1497	3		
Reviewer		Anita Patel	Prep Batch Number(s):	GSS1				
#1	A <sup>2</sup>	DESCRIPTION		YES	NO	NA3	NR <sup>4</sup>	ER#
S1	OI	Initial calibration (ICAL)						
			e response factors for each analyte within QC	x				11
		limits?		100				
		Were percent RSDs or correlation co	CE 10 1 C C C C C C C C C C C C C C C C C	X				
			mended in the method used for all analytes?	Х	111		-	
			ne lowest and highest standard used to	x				
		calculate the curve?						
		Are ICAL data available for all instrur		X				
			verified using an appropriate second source	x		-	1	
		standard?		(100				
S2	OI		erification (ICCV AND CCV) and continuing					
		Was the CCV analyzed at the metho		X				
			nalyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each		X	111			
	-		e concentration in the inorganic CCB <mdl?< td=""><td>1.1</td><td></td><td>X</td><td></td><td></td></mdl?<>	1.1		X		
S3	0	Mass spectral tuning						
		Was the appropriate compound for the		X	111			
		Were ion abundance data within the	method-required QC limits?	Х				
S4	0	Internal standards (IS)				-		
			mes within the method-required QC limits?	X				
S5	OI	Raw data (NELAC Section 5.5.10)						
			omatograms, spectral data) reviewed by an	x				
		analyst?		20	1.1			
-		Were data associated with manual in	tegrations flagged on the raw data?	X	111			
S6	0	Dual column confirmation						
		Did dual column confirmation results			111	X		
S7	0	Tentatively identified compounds		-				000
			ss spectra and TIC data subject to appropriate			x		
-		checks?				^		
S8		Interference Check Sample (ICS) r				-		
-		Were percent recoveries within meth			1	X		
S9	1		kes, and method of standard additions			- 5		
			, and the linearity within the QC limits			x		
	-	specified in the method?				· * .		
S10	OI	Method detection limit (MDL) studi			-			
		Was a MDL study performed for each		X				
544		Is the MDL either adjusted or support	ted by the analysis of DCSs?	X	-1			5
S11	OI	Proficiency test reports		1000	-	-		-
	100	was the laboratory's performance ac	ceptable on the applicable proficiency tests or	x				
S12	OI	evaluation studies?		5.8				_
512	OI	Standards documentation	- 2007	-	-	-	-	-
			s NIST-traceable or obtained from other	X				
040	01	appropriate source?	2000 4000	132				- 81
S13	OI	Compound/analyte identification p		12.				
S14	OI	Are the procedures for compound/an		Х				
314	UI	Demonstration of analyst compete		V 1	-	-	-	
	11	Was DOC conducted consistent with		X	-			
		Is documentation of the analyst's com		X				
CAE	OI	Marking the first date of						
S15	OI	Verification/validation documentat			-			
S15	OI	Are all the methods used to generate	the data documentated, verified, and	х				
S15 S16	OI		the data documentated, verified, and	X				



and an		LRC Date:	8/29/2012							
ne:	c: Quarterly Well Sampling, Parker Laboratory Project Number: TC14973									
Name:	Anita Patel	Prep Batch Number(s):	GSS178, VZ3732							
Descript	ion									
blank. Th	e SDL is defined in the report as the MI	DL.								
included	in the laboratory data package.									
All anoma	alies are discussed in the case narrative									
			mponents reported are not listed or							
T DATE	Descript For report plank. The for report included The laborated All anoma	Description  For reporting purposes, the MQL is defined in the lank. The SDL is defined in the report as the MI for reporting purposes, the method blank represently defined in the laboratory data package.  The laboratory is NELAC-accredited under the Telethods associated with this laboratory data packall anomalies are discussed in the case narrative the Laboratory does not perform DCS analysis for the Laboratory does not perform DCS analysis for the case narrative.	Description  For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MO  plank. The SDL is defined in the report as the MDL.  For reporting purposes, the method blank represents the unadjusted MQL. The DCS is							

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS	S Vo	latiles		

QC Data Summaries

## Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



# Method Blank Summary Job Number: TC14973

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	ND	1.0	0.25	ug/l		
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l		
108-88-3	Toluene	ND	1.0	0.26	ug/l		
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l		
CAS No.	Surrogate Recoveries		Limi	ts			
1868-53-7	Dibromofluoromethane	106%	79-12	22%			
17060-07-0	1,2-Dichloroethane-D4	98%	75-12	21%			
2037-26-5	Toluene-D8	106%	87-11	9%			
460-00-4	4-Bromofluorobenzene	114%	80-13	3%			

Method: SW846 8260B

## Blank Spike Summary

Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	<b>Analytical Batch</b>
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	109%	80-133%



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

## Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC14973

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

		TC14970-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.1	99	72.6	97	2	75-111/12
CAS No.	Surrogate Recoveries	MS	MSD	ТС	C14970-1	Limits			
1868-53-7	Dibromofluoromethane	107%	106%	10	4%	79-122	%		
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96	%	75-1219	%		
2037-26-5	Toluene-D8	107%	107%	10	7%	87-119	%		
460-00-4	4-Bromofluorobenzene	113%	113%	11	3%	80-1339	%		



<sup>\* =</sup> Outside of Control Limits.



Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method: RSKSOP-147/175

# 7.1.1

## Method Blank Summary

Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	<b>File ID</b>	DF	<b>Analyzed</b> 08/27/12	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1		LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l

# Blank Spike Summary Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72,5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

## **Matrix Spike Summary**

Job Number: TC14973

TC14973-1

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14970-1 Spike MS MS CAS No. Compound ug/l Q ug/l ug/l % Limits 74-82-8 Methane 914 b 21.5 600 -337\* a 60-140 74-85-1 Ethene 1.0 U 57.4 58.8 102 60-140 74-84-0 Ethane 42.3 43.3 71.7 68 60-140 74-98-6 Propane 1.5 U 60.6 56.4 93 60-140 75-28-5 Isobutane 1.5 U 72.5 70.6 97 60-140 106-97-8 Butane 1.5 U 76.6 74.0 97 60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

## **Duplicate Summary** Job Number: TC14973

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14973-1

		TC14970-1	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	914 a	869	Е	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



### ANALYSIS REPORT

Lab #: 261135 Job #: 19036

Sample Name/Number: WW01-WEL-081712

Company: Oil Tracers, LLC

Date Sampled: 8/17/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical	δ13C	δD	$\delta^{18}O$
	mol. %	%。	%	%
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.44			
Oxygen	0.029			
Nitrogen	80.01			
Carbon Dioxide	0.30			
Methane	17.70	-46.00	-174.9	
Ethane	0.518	-20.3		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	0.0004			
Iso-pentane	0.0004			
N-pentane	nd			
11				

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 188

Specific gravity, calculated: 0.902

Remarks:

Hexanes + -----

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.72

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12



## Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW19-WIL

Accutest Job Number: TC14962

Sampling Date: 08/19/12

### Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



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## Sample Summary

EarthCon Consultants

Job No:

TC14962

Quarterly Well Sampling, Parker County, Texas Project No: 2nd Quarter / WW19-WIL

Sample Collected			Matrix		Client
Number	Date	Time By	Received	Code Type	Sample ID
TC14962-1	08/19/12	14-10	08/21/12	AO Ground Water	WW19_WII _081012





#### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC14962

Site: Quarterly Well Sampling, Parker County, Texas Report Date 8/31/2012 6:47:47 PM

1 Sample was collected on 08/19/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14962. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

#### Volatiles by GCMS By Method SW846 8260B

Matrix AO Batch ID: VK449

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

#### Volatiles by GC By Method RSK SOP-147/175

Matrix AQ Batch ID: GSS178

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- = Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



# Summary of Hits Job Number: TC14962

Account: EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas 08/19/12 Project:

Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14962-1	WW19-WIL-0819	12				
Methane		1.98	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.136	0.0010	0.00050	mg/l	RSKSOP-147/175



Page 1 of 1



Sample Results	
Report of Analysis	



## 4

## Report of Analysis

Client Sample ID: WW19-WIL-081912

 Lab Sample ID:
 TC14962-1
 Date Sampled:
 08/19/12

 Matrix:
 AQ - Ground Water
 Date Received:
 08/21/12

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed By Prep Date Prep Batch **Analytical Batch** Run #1 K10046.D 1 08/23/12 EM n/a n/a VK449 Run #2

Purge Volume Run #1 5.0 ml

Run #2

#### **Purgeable Aromatics**

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/1	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	99%		79-122%		
17060-07-0	1,2-Dichloroethane-D4	94%		75-121%		
2037-26-5	Toluene-D8	103%		87-119%		
460-00-4	4-Bromofluorobenzene	123%		80-133%		

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit E = Indicates value exceeds calibration range J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Client Sample ID: WW19-WIL-081912

Lab Sample ID: TC14962-1

Matrix: Method:

Project:

AQ - Ground Water RSKSOP-147/175

Quarterly Well Sampling, Parker County, Texas

**Date Sampled:** 08/19/12 **Date Received:** 08/21/12

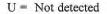
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003626.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003628.D	10	08/27/12	LT	n/a	n/a	GSS178

#### **RSK147 Special List**

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	1.98 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/I	
74-84-0	Ethane	0.136	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2



SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound







	forms
Custody	Documents and Other Forms
Includes t	the following where applicable:



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## CHAIN OF CUSTODY

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TC14962: Chain of Custody

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### **Accutest Laboratories Sample Receipt Summary**

Accutest Job Number: TC14			Client: EART	HCON CON	ISULTAN	TO AND THE STREET	Project: 2ND QUARTE				
Date / Time Received: 8/21/	2012		Deliv	ery Method		FedEx	Airbill #'s: 801561645028				
No. Coolers: 1	Thern	n ID:	RGUN5;				Temp Adjustment Factor:	-0.4;			
Cooler Temps (Initial/Adjuste	d): #1	: (2.3/1	.9);								
The second secon	or N	_		-	or N	Sample Inte	egrity - Documentation	<u>Y</u>	or	N.	
Custody Seals Present:			B. COC Present:	✓		1. Sample la	bels present on bottles:	V			
2. Custody Seals Intact:		4. S	impl Dates/Time	OK 🔽		2. Container	labeling complete:	V			
Cooler Temperature	Y	or N				3. Sample c	ontainer label / COC agree;	$\checkmark$			
1. Temp criteria achieved:	$\checkmark$					Sample Int	egrity - Condition	Y	or	N	
Cooler temp verification:						1. Sample re	ecvd within HT:	V			
3. Cooler media:	lo	e (Bag)				2. All contain	ners accounted for:	<b>V</b>		П	
Quality Control Preservation	Y	or N	N/A	WTB	STB	3. Condition	of sample:		Intac	t	
1. Trip Blank present / cooler:	•			$\mathbf{Z}$		Sample Int	egrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:		V					requested is clear:	$\overline{\mathbf{v}}$		П	
3. Samples preserved properly:	V					2. Bottles re	ceived for unspecified tests			V	
4. VOCs headspace free:	V					3. Sufficient	volume recvd for analysis;	~			
						4. Composi	ting instructions clear:				V
						5. Filtering	nstructions clear:			П	V
Comments											

TC14962: Chain of Custody Page 2 of 3

Page 1 of 2





## Sample Receipt Log

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	40Z	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1.	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	402	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14962: Chain of Custody

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7	è	K	
	C	5	Ü.

# Appendix A Laboratory Data Package Cover Page TC14962 This data package consists of

(I	This sig	nature page, the laboratory r	eview checklist, and the following reportable da	ta:
Q.	R1	Field chain-of-custody do		
Q.	R2	Sample identification cros	ss-reference;	
J	R3	Test reports (analytical d	ata sheets) for each environmental sample that	includes:
		a)	Items consistent with NELAC 5.13	or ISO/IEC 17025 Section 5.10
		b)	dilution factors,	
		c)	preparation methods,	
		-d)	cleanup methods, and	
		e)	if required for the project, tentative	ly identified compounds (TICs).
Ţ.	R4	Surrogate recovery data	including:	
		a)	Calculated recovery (%R), and	
		b)	The laboratory's surrogate QC lim	its.
b).	R5	Test reports/summary for		
ū	R6		ms for laboratory control samples (LCSs) inclu-	dina:
67		a)	LCS spiking amounts,	
		b)	Calculated %R for each analyte, a	nd
		c)	The laboratory's LCS QC limits.	
	R7		atrix spike/matrix spike duplicates (MS/MSDs)	including:
6		a)	Samples associated with the MS/N	
		b)	MS/MSD spiking amounts,	nob cicary identified,
		c)	Concentration of each MS/MSD ar	salvte measured in the parent and
		d)	Calculated %Rs and relative perce	and the first of the control of the first of the first of the control of the cont
		e)	The laboratory's MS/MSD QC limit	
ά	R8	the second secon	licate (if applicable) recovery and precision:	is
8	110	a)	The amount of analyte measured i	n the duplicate
		b)		if the duplicate,
		c)	The calculated RPD, and	adjust alcolings
-	DO.		The laboratory's QC limits for anal	
Çi G	R9 R10		n limits (MQLs) and detectability check sample	results for each analyte for each
LS)	KIU	Other problems or anoma	alles,	
			ewed (NR)" item in Laboratory Review Checklis ELAC accreditation under the Texas Laboratory	
Texas La the Exce requirem affirm to	aboratory A eption Reponents of the the best of have been	ccreditation Program for all to ort. This data package has be methods used, except where my knowledge, all problems	elease of this laboratory data package. This lab ne methods, analytes, and matrices reported in en reviewed by the laboratory and is complete a e noted by the laboratory in the attached except anomalies, observed by the laboratory as havin in the Laboratory Review Checklist, and no infor	this data package except as noted in and technically compliant with the ion reports. By my signature below, I ig the potential to affect the quality of
Check, i	if applicab	le: This laboratory meets an	exception under 30 TAC&25.6 and was last ins	spection by
[]		[X]TCEQ or []	on April 2011. Any findings affecting the data	in this laboratory data package are
		noted in the Exception Re	ports herein. The official signing the cover pag eleasing this data package and is by signature a	e of the report in which these data are
QA Man		Care Tara Tara	Santa Carlo	27
Name (P	rinted)	Signature	Official Title (printed)	Date
Richard	Rodriguez	Llenge	Laboratory Director	8/29/2012
		O		



aboratory		ABORATORY REVIEW C	_	29/20	12					
Project Na		Quarterly Well Sampling, Parker County, Texas	LRC Date: Laboratory Project Number:	TC14962						
eviewer		Anita Patel	Prep Batch Number(s):	_	_	VK4	19	_		
#1	A <sup>2</sup>	DESCRIPTION	Trop Bater Hamber(e).			NA <sup>3</sup>		TER		
R1	OI	CHAIN-OF-CUSTODY (C-O-C):	120	1110	147.5	1414	1			
	- Oi		andard conditions of sample acceptability	х				П		
			nditions described in an exception report?	X				Ė		
R2	OI	Sample and quality control (QC) id	entification							
		Are all field sample ID numbers cross	-referenced to the laboratory ID numbers?	X		751	1			
		Are all laboratory ID numbers cross-re	eferenced to the corresponding QC data?	X						
R3	OI	Test reports			-					
		Were samples prepared and analyze	d within holding times?	X						
		Other than those results <mql, standards?<="" td="" were=""><td>all other raw values bracketed by calibration</td><td>x</td><td></td><td></td><td>la f</td><td></td></mql,>	all other raw values bracketed by calibration	x			la f			
		Were calculations checked by a peer	or supervisor?	X	$\vdash$			1		
		Were all analyte identifications check		X				-		
		Were sample detection limits reported		X				-		
			samples reported on a dry weight basis?	1		X		1		
	1	Were % moisture (or solids) reported				X		1		
			latile analysis extracted with methanol per					1		
		SW846 Method 5035?				X				
		If required for the project, are TIC's re	ported?			Х				
R4	0	Surrogate recovery data	•	100	100		1			
		Were surrogates added prior to extract	ction?	X				П		
			all samples within the laboratory QC limits?	X		17	10			
R5			1	1	-					
		Were appropriate type(s) of blanks ar		Х						
	Were blanks analyzed at the appropri	X			10					
		Were method blanks taken through the								
		preparation and, if applicable, cleanur	X							
		Were blank concentrations <mql?< td=""><td>X</td><td> 1</td><td></td><td>150</td><td></td></mql?<>	X	1		150				
R6	OI	Laboratory control samples (LCS):				3	200			
		Were all COCs included in the LCS?	X				Г			
199			ire analytical procedure, including prep and	x						
		cleanup steps?		100,000						
		Were LCSs analyzed at required freq		Х			J = 1			
		Were LCS (and LCSD, if applicable)		X	1 11		100			
		Does the detectablility check sample detect the COCs at the MDL used to	data document the laboratory's capability to calculate the SDLs?	х				3		
		Was the LCSD RPD within QC limits	?	5.1	=	X				
R7	OI	Matrix spike (MS) and matrix spike								
		Were the project/method specified an		X			127			
		Were MS/MSD analyzed at the appro		X	1		100			
		Were MS (and MSD, if applicable) %			X					
		Were the MS/MSD RPDs within labor	ratory QC limits?	X			- 1			
R8	OI	Analytical duplicate data								
		Were appropriate analytical duplicate		X			2.1			
		Were analytical duplicates analyzed a		X						
			ations within the laboratory QC limits?	X				100		
R9	OI	Method quantitation limits (MQLs):		123		- 3				
			e included in the laboratory data package?	X	10					
			entration of the lowest non-zero calibration	X				-		
		Are unadjusted MQLs and DCSs incl	uded in the laboratory data package?		X	-		18		
R10	- 01	Other problems/anomalies								
			ecial conditions noted in this LRC and ER?	X						
			ogy used to lower the SDL to minimize the	X						
			nder the Texas Laboratory Accreditation nd methods associated with this laboratory	х				:		



aboratory		Accutest Gulf Coast	8/29/2012						
Project Na		Quarterly Well Sampling, Parket		TC14962					
Reviewer		Anita Patel	Prep Batch Number(s):		78, VK4				
#1	A <sup>2</sup>	DESCRIPTION		YES N	NO NA3	NR'	ER		
S1	OI	Initial calibration (ICAL)		1		-	-		
		Were response factors and/or relati limits?	ve response factors for each analyte within QC	×	a Cal				
		Were percent RSDs or correlation of	coefficient criteria met?	X		ΙZ			
		Was the number of standards recor	nmended in the method used for all analytes?	X		I E I			
		Were all points generated between calculate the curve?	the lowest and highest standard used to	х					
		Are ICAL data available for all instru	ments used?	X					
		Has the initial calibration curve bee	alibration curve been verified using an appropriate second source						
	- 01	standard?	100	_		_			
S2	OI	Initial and continuing calibration		-	-	-			
		Was the CCV analyzed at the meth		X					
	0.01		analyte within the method-required QC limits?	Х					
		Was the ICAL curve verified for each		X					
			te concentration in the inorganic CCB <mdl?< td=""><td>16.71</td><td>X</td><td></td><td></td></mdl?<>	16.71	X				
\$3	0	Mass spectral tuning		1	-	1	-		
		Was the appropriate compound for		X		1 = 1			
		Were ion abundance data within the	e method-required QC limits?	X					
S4	0	Internal standards (IS)							
		Were IS area counts and retention t	imes within the method-required QC limits?	X					
S5 OI		Raw data (NELAC Section 5.5.10)		100					
		Were the raw data (for example, chi	romatograms, spectral data) reviewed by an	x					
		analyst?		^	-1-				
		Were data associated with manual i	X						
\$6	O Dual column confirmation			HELE	-				
401		Did dual column confirmation results meet the method-required QC?			X				
S7	0	Tentatively identified compounds	-	1000					
		If TICs were requested, were the ma	ass spectra and TIC data subject to appropriate		x	'n			
S8		Interference Check Sample (ICS)	results		-				
			ecoveries within method QC limits?						
S9	1		pikes, and method of standard additions		X	-			
			s, and the linearity within the QC limits		x				
S10	OI	Method detection limit (MDL) stud	dias				_		
310	UI	Was a MDL study performed for ear		VI	-	_			
		Is the MDL either adjusted or suppo		X	-		-		
S11	OI		rited by the analysis of DCSs?	X	_		5		
311	U	Proficiency test reports	cceptable on the applicable proficiency tests or		_				
		evaluation studies?	cceptable on the applicable proficiency tests or	X	4 0				
\$12	OI	Standards documentation					_		
312	OI.		es NIST-traceable or obtained from other		-	-			
		appropriate source?	es Mis I-li aceable of obtained from other	X					
S13	OI	Compound/analyte identification	procedures		_		_		
313	Oi -			VI	-	-			
S14	OI	Are the procedures for compound/a Demonstration of analyst competent		X			_		
314	OI			VI	-	-			
	11 7	Was DOC conducted consistent wit Is documentation of the analyst's co		X	-	-			
S15	01			Λ.					
515	OI		ation for methods (NELAC Chapter 5)		7	_			
			e the data documentated, verified, and	x					
040	- 01	validated, where applicable?	dures (CODs)			1			
S16	OI	Laboratory standard operating pr		100	-	-			
		Are laboratory SOPs current and on	file for each method performed?	X		-			



Laboratory		Accutest Gulf Coast	ECKLIST (continued): Exc	8/29/2012
Project Na		Quarterly Well Sampling, Par	ker Laboratory Project Number:	TC14962
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS178, VK449
ER#	Descript	tion		
1	blank, Th	ne SDL is defined in the report as the		
2		ting purposes, the method blank re in the laboratory data package.	presents the unadjusted MQL. The DCS i	s on file in the laboratory and is not
3			ne Texas Laboratory Accreditation Progra package for analytes that are listed in the	
4	All anom	alies are discussed in the case narr	ative.	
5		oratory does not perform DCS analy ave values in the Texas TRRP PCL	sis for Method RSKSOP-147/175. The contables.	omponents reported are not listed o

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS	S Volatiles	

QC Data Summaries

### Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: SW846 8260B

## 6.1.

## -

## Method Blank Summary

1868-53-7 Dibromofluoromethane

17060-07-0 1,2-Dichloroethane-D4

460-00-4 4-Bromofluorobenzene

2037-26-5 Toluene-D8

Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

79-122%

75-121%

87-119%

80-133%

The QC reported here applies to the following samples:

TC14962-1

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l
108-88-3	Toluene	ND	1.0	0.26	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l
CAS No.	Surrogate Recoveries		Limi	ts	

101%

96%

102%

123%

18 of 25
ACCUTEST:
TC14962

Method: SW846 8260B

## Blank Spike Summary

Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

			By	Prep Date	Prep Batch	Analytical Batch
K10024.D	1	08/23/12	EM	n/a	n/a	VK449
	C10024.D	\$10024.D 1	\$10024.D 1 08/23/12	X10024.D 1 08/23/12 EM	\$10024.D 1 08/23/12 EM n/a	\$10024.D 1 08/23/12 EM n/a n/a

The QC reported here applies to the following samples:

TC14962-1

Spike BSP **BSP** CAS No. Compound % ug/l ug/l Limits 71-43-2 Benzene 25 24.2 97 76-118 100-41-4 Ethylbenzene 25.2 25 101 75-112 108-88-3 Toluene 25 25.0 100 77-114 1330-20-7 Xylene (total) 75 76.6 102 75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

## Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

TC14962-1

		TC1497	4-3	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l	Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U		25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U		25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U		25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U		75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2



<sup>\* =</sup> Outside of Control Limits.



GC Volatiles		

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method: RSKSOP-147/175

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14962-1

CAS No.	Compound	Result	RL	MDL	Units Q	2
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/I	
75-28-5	Isobutane	ND	1.5	0.75	ug/I	
106-97-8	Butane	ND	1.5	0.75	ug/l	

Method: RSKSOP-147/175

# Blank Spike Summary Job Number: TC14962

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14962-1

Compound	Spike ug/I	BSP ug/l	BSP %	Limits
Methane	21.5	20.8	97	70-130
Ethene	57.4	58.2	101	70-130
Ethane	43.3	41.8	97	70-130
Propane	60.6	56.5	93	70-130
Isobutane	72.5	71.1	98	70-130
Butane	76.6	73.7	96	70-130
	Methane Ethene Ethane Propane Isobutane	Compound         ug/I           Methane         21.5           Ethene         57.4           Ethane         43.3           Propane         60.6           Isobutane         72.5	Compound         ug/l         ug/l           Methane         21.5         20.8           Ethene         57.4         58.2           Ethane         43.3         41.8           Propane         60.6         56.5           Isobutane         72.5         71.1	Compound         ug/I         ug/I         %           Methane         21.5         20.8         97           Ethene         57.4         58.2         101           Ethane         43.3         41.8         97           Propane         60.6         56.5         93           Isobutane         72.5         71.1         98



<sup>\* =</sup> Outside of Control Limits.

# 3.1 7

Page 1 of 1

Method: RSKSOP-147/175

## Matrix Spike Summary

Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14962-1

		TC14970-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits
74-82-8	Methane	914 b	21.5	600	-337* a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

<sup>(</sup>a) Outside control limits due to high level in sample relative to spike amount.



<sup>(</sup>b) Result is from Run #2.

<sup>\* =</sup> Outside of Control Limits.

Method: RSKSOP-147/175

## **Duplicate Summary**

Job Number: TC14962

Account:

PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

TC14962-1

		TC14970-1	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	914 <sup>a</sup>	869	Е	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.



<sup>\* =</sup> Outside of Control Limits.



### ANALYSIS REPORT

Lab #: 261148 Job #: 19036

Sample Name/Number: WW19-WIL-081912 Company: Oil Tracers, LLC

Date Sampled: 8/19/2012

Container: Dissolved Gas Bottle

Field/Site Name: Second Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	δ <sup>13</sup> C ‰	δD ‰	δ <sup>18</sup> Ο ‰
Carbon Monoxide	nd			1
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.16			
Oxygen	0.12			
Nitrogen	69.30			
Carbon Dioxide	0.27			
Methane	28.38	-43.73	-119.0	
Ethane	0.766	-20.9		
Ethylene	nd			
Propane	0.0008			
Propylene	nd			
Iso-butane	nd			
N-butane	0.0008			
Iso-pentane	0.0004			
N-pentane	nd			
Hexanes +	0.0004			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 301

Specific gravity, calculated: 0.857

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.